

R-991



最終報告書

試験名：ペルフルオロヘプタンのラットを用いた
経口投与による反復投与毒性・生殖発生毒性併合試験

試験番号：R-991

試験期間：2008年8月22日～2011年6月17日

試験施設

株式会社ボヅリサーチセンター 御殿場研究所
〒412-0039 静岡県御殿場市かまど 1284

試験委託者

厚生労働省医薬食品局審査管理課 化学物質安全対策室
〒100-8916 東京都千代田区霞が関 1-2-2

株式会社ボヅリサーチセンター
〒151-0065 東京都渋谷区大山町 36-7

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2. 試験実施概要

2.1 試験計画書

試験番号 : R-991
試験表題 : ペルフルオロヘプタンのラットを用いた経口投与による
反復投与毒性・生殖発生毒性併合試験

2.2 試験目的

ペルフルオロヘプタンを、雄には交配前 14 日間及び交配期間を通して剖検前日まで、
雌には交配前 14 日間及び交配期間及び妊娠期間を通して授乳 4 日まで投与し、反復投
与による一般毒性学的な影響を検索するとともに、雌雄動物の性腺機能、交尾行動、
受胎及び分娩などの生殖発生に及ぼす影響を明らかにした。更に、一部の個体につい
ては 14 日間の回復期間を設け、毒性変化の可逆性を検討した。

2.3 試験委託者

厚生労働省医薬食品局審査管理課 化学物質安全対策室
〒100-8916 東京都千代田区霞が関 1-2-2

2.4 試験受託者

株式会社ボヅリサーチセンター
〒151-0065 東京都渋谷区大山町 36-7

2.5 試験実施施設

株式会社ボヅリサーチセンター 御殿場研究所
〒412-0039 静岡県御殿場市かまど 1284
運営管理者 : [REDACTED]

2.6 被験物質

購入先 : 中北薬品株式会社
名称 : ペルフルオロヘプタン、perfluoroheptane
(CAS 番号 : 335-57-9)
別名 : ヘキサデカフルオロヘプタン、hexadecafluoroheptane
受領日 : 2008 年 8 月 26 日
保存場所 : 御殿場研究所 被験物質保存室及び第 1 研究棟
被験物質調製室

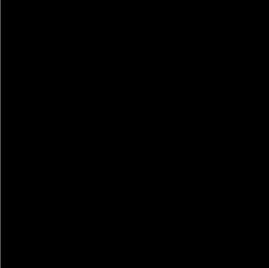
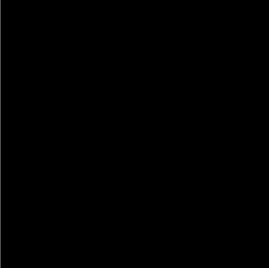
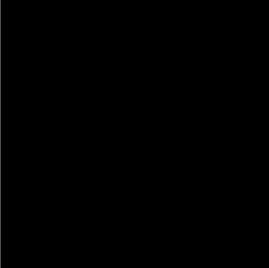
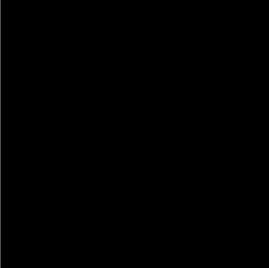
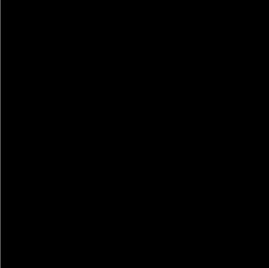
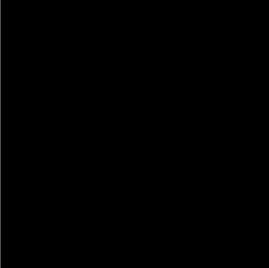
2.7 試験日程

試験開始日 : 2008年 8月 22日
動物入荷日 : 2008年 8月 25日
実験開始日（投与開始日）
: 2008年 9月 9日
交配開始日 : 2008年 9月 23日
分娩開始日 : 2008年 10月 16日
雄動物剖検日 : 2008年 10月 21日
回復開始日 : 2008年 10月 21日
雌動物剖検開始日 : 2008年 10月 21日
実験完了日（動物試験終了日）
: 2008年 11月 4日
試験終了日 : 2011年 6月 17日

2.8 試験責任者

株式会社ボゾリサーチセンター 御殿場研究所 研究部


2.9 試験担当者

動物試験担当者 : 
被験物質保存責任者 : 
臨床検査責任者 : 
病理検査責任者 : 
化学分析責任者 : 
統計解析責任者 : 

2.10 試験成績の信頼性に影響を及ぼしたと思われる環境要因

病理組織学検査において、動物番号：3004 の上皮小体が標本上欠如した。しかし、本例は検査対象動物ではなく、高用量群の検査において上皮小体に被験物質投与の影響が認められていないことから、試験の信頼性に及ぼす影響はないと判断した。

他には本試験に関して、試験成績の信頼性に影響を及ぼしたと思われる環境要因はなかった。

2.11 資料保存

株式会社ボゾリサーチセンターの保存方法に従い、試験計画書（試験計画書変更書を含む）原本、記録文書、生データ、報告書類（最終報告書は原本）及び標本（被験物質保存サンプルを含む）は株式会社ボゾリサーチセンター御殿場研究所の資料保存施設に最終報告書提出後10年間保存する。期間終了後の保存については、厚生労働省医薬食品局審査管理課 化学物質安全対策室と株式会社ボゾリサーチセンター間で協議し、その処置を決定する。ただし、長期保存に耐えられない生体試料（尿、血漿、血清）については、試験終了時に廃棄した。

2.12 試験責任者の記名・なつ印

2011 年 6 月 17 日

3. 試験従事者一覧

検疫・馴化 :

群構成 :

被験液の調製 :

投与 :

被験液の分析 :

一般状態の観察 :

詳細な一般状態の観察、機能検査、握力・自発運動量の測定

体重・摂餌量測定 :

腫瘍検査・交配 :

分娩及び授乳観察 :

出生児の剖検（授乳4日）

尿検査（含、摂水量測定）

R-991

採血、血液学・血液化学検査

:

最終体重

:

剖検、器官重量測定（含、黄体数確認、整形）

:

病理組織学検査

:

統計解析

:

4. 要約

ペルフルオロヘプタンの 0 (対照群 : 1%Tween80 添加 1 w/v% CMC 溶液)、100、300 及び 1000 mg/kg を、Sprague-Dawley 系 SPF ラットの雄には交配前 14 日間及び交配期間を通して剖検前日まで (42 日間)、雌には交配前 14 日間及び交配期間並びに妊娠期間を通して授乳 4 日まで (42~48 日間) 投与し、反復投与毒性及び生殖発生毒性を検討した。更に、0 及び 1000 mg/kg 投与群については、42 日間投与した後 14 日間の回復期間を設け、毒性変化の可逆性を検討した。

1) 反復投与毒性

一般状態、詳細な一般状態の観察、機能検査、握力測定、自発運動量の測定、体重、摂餌量、尿検査（摂水量含む）、血液学検査、血液化学検査、器官重量及び病理学検査に被験物質投与による影響は認められなかった。

2) 生殖発生毒性

性周期、交尾までに要した日数、交尾率、授精率及び受胎率には被験物質投与の影響は認められなかった。更に、出産率、妊娠期間、黄体数、着床痕数、着床率、死産児率、出生児数、出生率及び性比に被験物質投与の影響は認められず、授乳期間中の授乳状態にも異常は認められなかった。

出生児では、外表観察、出生時及び授乳 4 日の体重及び授乳 4 日剖検所見及び生存率に被験物質投与による変化は認められなかった。

これらの結果から、ペルフルオロヘプタンの反復投与毒性及び生殖発生毒性に対する無影響量はいずれも 1000 mg/kg/day と判断した。

5. 緒言

厚生労働省医薬食品局審査管理課 化学物質安全対策室の委託により、ペルフルオロヘプタンのラットを用いた経口投与による反復投与毒性・生殖発生毒性併合試験を実施したので、その成績を報告する。

なお、本試験は以下の基準を遵守し、ガイドライン等に準拠して、株式会社ボゾリサーチセンターで実施した。本試験は株式会社ボゾリサーチセンター動物実験委員会の承認を受けて実施した。

GLP

- ・ 「新規化学物質等に係る試験を実施する試験施設に関する基準について」
(平成 15 年 11 月 21 日 : 薬食発第 1121003 号、平成 15・11・17 製局第 3 号、環保企発第 031121004 号、平成 20 年 7 月 4 日最終改正)

毒性試験ガイドライン

- ・ 「新規化学物質等に係る試験の方法について」
(平成 15 年 11 月 21 日 : 薬食発第 1121002 号、平成 15・11・13 製局第 2 号、環保企発第 031121002 号、平成 18 年 11 月 20 日最終改正)
- ・ 「OECD Guideline for Testing of Chemicals 422」
(OECD 理事会 : 1996 年 3 月 22 日)

動物の福祉

- ・ 「動物の愛護及び管理に関する法律」
(昭和 48 年 10 月 1 日法律第 105 号、平成 17 年 6 月 22 日最終改正)
- ・ 「実験動物の飼養及び保管並びに苦痛の軽減に関する基準」
(平成 18 年 4 月 28 日環境省告示第 88 号)
- ・ 「動物実験の適正な実施に向けたガイドライン」
(日本学術会議 平成 18 年 6 月 1 日)

6. 試験材料及び方法

6.1 被験物質及び媒体

6.1.1 被験物質

ペルフルオロヘプタンは厚生労働省医薬食品局審査管理課 化学物質安全対策室から以下の情報とともに購入した（添付資料 1）。

購入先	:	[REDACTED]
製造者	:	[REDACTED]
名称	:	ペルフルオロヘプタン、perfluoroheptane
別名	:	ヘキサデカフルオロヘプタン、hexadecafluoroheptane
CAS 番号	:	335-57-9
構造式又は示性式	:	$ \begin{array}{cccccccc} & F & F & F & F & F & F & F \\ & & & & & & & \\ F-C & -C & -C & -C & -C & -C & -C & -F \\ & & & & & & & \\ & F & F & F & F & F & F & F \end{array} $
純度	:	99.8%
不純物	:	不明
入手量	:	1000g
性状	:	無色液体
分子量	:	3888.05
比重	:	1.720
ロット番号	:	10141168
安定性	:	関連試験終了後に東京化成工業株式会社にて、残余被験物質で純度を確認した結果、試験開始前とほぼ同様であり安定性に問題はなかった。（添付資料 2）。
保存方法	:	室温（実測値：18~24°C）
保存場所	:	御殿場研究所 被験物質保存室及び第1研究棟2階被験物質調製室
取扱い上の注意	:	作業場の換気を十分に行い、保護眼鏡、保護手袋等の適切な保護具を着用し、直接の接触を防ぎ、吸入しないようにマスクをした。取り扱い後は手、顔等を良く洗い、うがいをした。
残量の処置	:	被験物質 5g を保存試料として御殿場研究所 被験物質保存室に保存した。分析用に小分けした残量及び動物試験終了後の残量はすべて焼却処分した。

6.1.2 媒体

- 1) 名称 : 注射用水
ロット番号 : 8D86
規格 : 日本薬局方
製造者 : 株式会社大塚製薬工場
保存方法 : 室温
保存場所 : 御殿場研究所 第1研究棟2階被験物質調製室
- 2) 名称 : カルボキシメチルセルロースナトリウム（以下 CMC と略す）
ロット番号 : 7627
規格 : 日本薬局方
製造者 : 丸石製薬株式会社
保存方法 : 室温
保存場所 : 御殿場研究所 第1研究棟2階被験物質調製室
- 3) 名称 : Tween80（ポリオキシエチレンソルビタンモノオレート）
ロット番号 : 7398H
規格 : 試薬
製造者 : MP Biomedicals, Inc.
保存方法 : 室温
保存場所 : 御殿場研究所 第1研究棟2階被験物質調製室

6.2 被験液の調製

6.2.1 被験液の調製及び保存方法

1) 媒体の調製

必要量のCMCを秤取し、注射用水に溶解後、調製量の1v/v%に相当するTween80を加え溶解させた。その後メスシリンドーに移し、更に注射用水を加えて1%Tween80添加1w/v%CMC溶液を調製した。

2) 被験液の調製

必要量の被験物質を秤取し、1%Tween80添加1w/v%CMC溶液で懸濁後、メスシリンドーに移し、更に媒体を加えて所定の濃度液を調製した。調製は7日に1回以上の頻度で行い、使用時まで褐色ガラス瓶（遮光瓶）に入れて冷所（冷蔵庫内、実測値：3~6°C）で保存し、使用前に室温に戻した。残液は吸水性のよいもの（新聞紙、ペーパータオル等）に吸収させて焼却処分した。

6.2.2 被験液の安定性

本被験物質の1及び200mg/mL溶液（媒体：1%Tween80添加1w/v%CMC溶液）は、遮光容器で冷所（冷蔵庫内）8日間保存後、室温24時間は安定であることが株式

会社ボゾリサーチセンターで確認されている（添付資料3、試験番号：A-2095）。

6.2.3 被験液の濃度・均一性確認

雄の投与第1週と投与最終週の投与に用いる各濃度液について、株式会社ボゾリサーチセンター御殿場研究所でGC法により分析した。その結果、各濃度液とともに表示値に対する被験物質の割合は92.0~99.0%、C.V.値は5.8%以下であり、いずれも許容範囲内（濃度：表示値に対する割合；100±10%、C.V.：10%以下）であった（添付資料4、5）。

[測定対象標準物質]

製造者	:	Alfa Aesar A Johnson Matthey Company
名称	:	ペルフルオロヘプタン
ロット番号	:	10141168
保存方法	:	室温（実測値：17~24°C）
保存場所	:	御殿場研究所 被験物質保存室及び生化学部標準物質保存場所

[試薬]

アセトン (試薬特級、和光純薬工業株式会社)

[使用機器]

GCシステム (Agilent Technologies Inc.)

GC	HP6890N
インジェクタ	G2613A
オートサンプラトレイ	G2614A
データ処理ソフト	GC ChemStation G2070AJ

天秤

分析用上皿電子天秤 AE240 (Mettler-Toledo AG)

その他

スターラー MGM-66 (柴田科学株式会社)

[標準原液及び標準溶液の調製]

ペルフルオロヘプタンの0.5012又は0.5011gを精密に秤量し、アセトンを加えて希釈して全量100mLとした標準原液を用時調製した（調製濃度：5.01mg/mL）。この1mLを正確に採取し、アセトンで希釈して全量50mLとした標準溶液を用時調製した（調製濃度：100μg/mL）。

[測定実測試料の調製]

測定試料をスターラーで攪拌しながら、十分懸濁させた後に n=1 で採取した。採取した測定試料を以下の手順に従い、アセトンで希釈して測定実測試料を調製した。

測定試料 (mg/mL)	1 次希釈		2 次希釈		希釈率
	採取量 (mL)	定容量 (mL)	採取量 (mL)	定容量 (mL)	
20	1	200	—	—	200
60	0.5	30	1	10	600
200	1	200	1	10	2000

[測定条件]

GC 条件

カラム	:	DB-17MS (0.25 mm I.D.×30 m、膜厚 0.25 μm、J&W)
キャリアガス	:	He
流量モード	:	コンスタントフロー モード
He 流量	:	0.5 mL/min
注入口	:	スプリット注入口
注入口温度	:	60°C
スプリット比	:	5:1
検出器	:	Flame ionization detector (FID)
検出器温度	:	280°C
H2 流量	:	40 mL/min
Air 流量	:	450 mL/min
N2 流量	:	50 mL/min
オーブン温度	:	30°C
試料注入量	:	1 μL

システム適合性

測定開始時に標準溶液を 3 回連続注入し、ペルフルオロヘプタンの保持時間及びピーク面積の再現性を確認した。

評価基準は保持時間及びピーク面積の相対標準偏差が 5% 以下とした。

その結果、ピーク面積の相対標準偏差は 2.3% 以下、保持時間の相対標準偏差は 0.1% 以下であり、すべて判定基準を満たす結果であったことから、本測定の信頼性は保証された。

[測定試料中ペルフルオロオクタン濃度の算出]

標準溶液を GC へ 3 回注入してペルフルオロヘプタンのピーク面積の平均 (Q_s) を求めた。別に測定実測試料を GC へ 1 回注入してペルフルオロヘプタンのピーク面積

(Qt) を求め、以下の式により測定試料中のペルフルオロヘプタン濃度を求めた。

$$\text{測定試料中ペルフルオロヘプタン濃度 (mg/mL)} = \frac{Qt}{Qs} \times A \times F \times \frac{1}{1000}$$

Qt : 測定実測試料のペルフルオロヘプタンのピーク面積

Qs : 標準溶液のペルフルオロヘプタンの平均ピーク面積

A : 標準溶液中のペルフルオロヘプタン濃度 ($\mu\text{g/mL}$)

F : 希釀率

6.3 試験動物

Sprague-Dawley 系 SPF ラット [Crl:CD(SD)、日本チャールス・リバー株式会社、厚木飼育センター] の雄 62 匹及び雌 73 匹をそれぞれ 8 週齢で入手^{注1)} し、15 日間の検疫・馴化飼育を行った。その間、一般状態の観察（1 回／日、詳細な一般状態の観察は期間中 1 回）、体重測定（週 1 又は 2 回）及び性周期検査（検疫期間終了後の 9 日間）を基に、雄は一般状態、雌は一般状態及び性周期にそれぞれ異常がなく^{注 2)}、体重増加が良好な雄 48 匹及び雌 58 匹をそれぞれ選択し、10 週齢で投与に使用した。投与開始時の体重範囲は雄で 334~385g、雌は 211~261g であった。

なお、群分けは群分け当日（投与開始の前日）の体重により各群の平均体重ができるだけ均等となるよう各群に割り付けた。個体の割付けはコンピュータを用いたブロック配置法及び無作為抽出法の組み合わせ（ブロック配置法で必要な群を構成し、試験群及び群内の個体番号を無作為に割当てた）で行った。群分けから除外された動物のうち、雄 14 匹はエーテル深麻酔下で安楽死させた。残りの雌 15 匹は無処置動物として継続飼育した。なお、継続飼育した無処置雌動物は死亡などにより交配すべき相手がない動物が認められなかつたため、交配期間終了後エーテル深麻酔下で安楽死させた。

注 1)： 試験計画書に従い、動物発注数は雄 60 匹及び雌 70 匹であったが、実際には雄 62 匹及び雌 73 匹が納入された。

注 2)： 膀胱像は発情前期 (P)、発情期 (E)、発情後期 (M) 及び発情休止期 (D) に分類し、P→E→M→D (→P) の順序で周期的变化を示し、4 又は 5 日の周期を繰り返す個体を正常、それ以外を性周期異常とした。

6.4 飼育条件

動物は、温度 21~25°C、相対湿度 43~64%、換気回数 1 時間 10~15 回、照明 1 日 12 時間 (07:00~19:00) の動物飼育室（飼育室番号：201 号室）でプラスチック製金属製網ケージ (W 250×D 350×H 200mm : 日本ケージ株式会社) で個別に、交配期間中は雌雄各 1 匹の計 2 匹を収容した。なお、妊娠 17 日から授乳 4 日までは、床敷（ホワイトフレーク : 日本チャールス・リバー株式会社）を入れたプラスチック製エコンケージ (W340×D400×H185 mm : 日本クリア株式会社) に母体単位で収容した。飼料は NMF

固体（滅菌：オリエンタル酵母工業株式会社、ロット番号：080521、080619）をステンレス製給餌器を用いて自由に摂取させた。飲料水は水道水（御殿場市営水道水：給水瓶使用）を自由に摂取させた。

飼料中の混入物質等については使用したロットについて、Eurofins Scientific Analytics で実施した分析結果を入手し、床敷については、Eurofins Scientific Analytics で定期的（年 6 回）に実施した分析結果を入手した。飲料水については、水道法に準拠した水質の分析を東芝機械環境センター株式会社に定期的（年 4 回）に依頼し、結果を入手した。これらのデータにより飼料、飲料水及び床敷中の混入物質が試験成績に影響を与える可能性のないことを確認し、分析報告書の写しを保存した。

6.5 動物の識別

動物の個体識別は入荷時に小動物用耳標をつけて行った。群分け後は、性別及び投与量ごと（対照群、低、中及び高用量の順）に 4 桁の番号をついた。なお、1000 の位は群、100 の位は性（0 番を雄、1 番を雌）、10 と 1 の位は個体番号とした。飼育ケージに群ごとに色分けしたケージラベルを付け、試験番号、投与経路、投与量、性、動物番号、耳標番号、剖検予定日（主群の雄及び回復群の雌雄）、交尾成立日（主群の雌雄）及び分娩日（主群の雌）を明記した。

6.6 投与経路、投与期間及び投与回数並びに回復期間とそれらの選択理由

投与経路は、OECD Guideline for Testing of Chemicals 422 に準じ、経口投与を選択した。投与期間は、主群の雄及び回復群の雌雄で交配前 14 日間、交配期間 14 日間及び交配期間終了後 14 日間の 42 日間、主群の雌で交配前 14 日間、交配期間及び妊娠期間を通して授乳 4 日までの 42~48 日間とした。

回復期間は回復群の雌雄について投与終了後 14 日間とし、その間休薬し、観察を行った。

6.7 投与方法

投与方法は、げっ歯類の経口投与に際して一般的な強制経口投与とした。投与容量は 5 mL/kg 体重とし、フレキシブル胃ゾンデを用いて 1 日 1 回強制経口投与した（08:20~11:56、ただし、投与時に分娩中であった動物は分娩終了後の 14:12~14:59 に投与した）。対照群には媒体（1%Tween80 添加 1 w/v% CMC 溶液）を同様に投与した。投与液はスターラーで攪拌しながら投与した。個体ごとの投与液量は最新の体重を基準に算出した。なお、雌の妊娠期間中は妊娠 7 日以降については妊娠 7 日の体重を基準に算出した。

6.8 投与量及び群構成

投与量は 100、300 及び 1000 mg/kg の 3 用量とし、対照群を加え 4 群構成とした。1 群当たりの動物数は交配を行う主群の各群で雌雄各 12 匹、交配しない回復群として対照群及び高用量群で雌各 5 匹とした。なお、雄の対照群及び高用量群の群内番号 8 番以降の動物は、最終投与終了日以降は回復群に移行した。群構成表を表 1. に示した。

表 1. 群構成表

試験群	投与量 (mg/kg)	被験液濃度 (mg/mL)	性	主群		回復群	
				動物数	動物番号	動物数	動物番号
対照群	0	0	雄	12	1001~1012	5 ^{注)}	1008~1012
			雌	12	1101~1112	5	1113~1117
低用量群	100	20	雄	12	2001~2012	—	—
			雌	12	2101~2112	—	—
中用量群	300	60	雄	12	3001~3012	—	—
			雌	12	3101~3112	—	—
高用量群	1000	200	雄	12	4001~4012	5 ^{注)}	4008~4012
			雌	12	4101~4112	5	4113~4117

注) : 雄の回復群は主群より移行した。

6.9 投与量の設定根拠

先に実施した「ペルフルオロヘプタンのラットを用いた 14 日間反復経口投与毒性試験（予備試験）」¹⁾では、1000 mg/kg において、雌で胸腺重量の高値がみられたが、軽度な変化であり、明らかな毒性所見とは考え難かった。したがって、本試験では予備試験同様に 1000 mg/kg を高用量とし、以下公比約 3 で除して 300 及び 100 mg/kg の 3 用量を設定した。

6.10 観察及び検査の方法

試験日の起算は下記の通りとした。

- | | |
|------------------|-------------------|
| 投与開始日 | : 投与第 1 日 |
| 交尾成立日 | : 妊娠 0 日 |
| 交尾までに要した日数 | : 交配開始日を 0 日として起算 |
| 分娩終了日 | : 授乳 0 日 |
| 回復開始日（投与期間終了の翌日） | : 回復第 1 日 |

6.10.1 一般状態の観察

全個体について、投与期間中は毎日 3 回（投与前、投与直後及び投与約 2 時間後）、回復期間中は毎日 1 回（午前中）、それぞれ体外表、栄養状態、姿勢、行動及び排泄物の異常などの一般状態を観察した。

6.10.2 詳細な一般状態の観察、機能検査、握力及び自発運動量の測定

詳細な一般状態の観察は投与開始前に1回、全個体について行った。また、主群の雄は投与期間中毎週1回、雌では交配前投与期間中は毎週1回、交配期間中、妊娠期間中及び授乳期間中は指定された日（交尾動物は妊娠1、7、14及び20日、未交尾動物は交配7日、分娩動物は授乳4日）にそれぞれ行った。回復群は投与期間中及び回復期間中毎週1回行った。機能検査、握力及び自発運動量の測定については、主群の雄（回復群のある群は回復群の全個体、その他の群は動物番号が若い5例）は投与終了週（投与6週、投与第39日）に、主群の雌は授乳4日（投与第42~43日）に、回復群では雌は投与終了週（投与6週、投与第39日）及び雌雄で回復終了週（回復2週、雌雄ともに回復第11日）に1群当たり5匹について行った。上記の観察、検査及び測定は、観察者に対して投与量などの情報を制限（ブラインド化）し、動物をランダムに配置した状態で行った。なお、詳細な一般状態の観察及び機能検査の評価には実数データ項目以外はスコア化した評点法を用いた。

- 1) 詳細な一般状態の観察
 - ホームケージ内観察
 - 姿勢、痙攣、異常行動
 - 手に持つての観察
 - ホームケージからの取り出し易さ、ハンドリングに対する反応（取り扱いやすさ、発声など）、被毛・皮膚の状態（被毛の汚れ、粗毛、外傷、皮膚の色など）、眼球（眼球突出、眼瞼の開き具合）、眼・鼻の分泌物、可視粘膜、自律神経機能（流涙、流涎、立毛、瞳孔径、呼吸）
 - オープンフィールド内観察
 - 覚醒状態、歩行、姿勢、振戦、痙攣、立ち上がり回数、排泄物（排糞数、排尿）、常同行動（身繕い、旋回など）、異常行動（自咬、後方突進など）
- 2) 機能検査
 - 聴覚反応、接近反応、接触反応、痛覚反応、瞳孔反射、空中正向反射、着地開脚幅
- 3) 握力測定
 - 機能検査に引き続き、CPUゲージMODEL-9502A（アイコーエンジニアリング株式会社）を用いて前肢及び後肢の握力を測定した。
- 4) 自発運動量の測定
 - 握力測定に引き続き、実験動物用自発運動センサーNS-AS01（株式会社ニューロサイエンス）を用いて自発運動量を測定した。測定は1時間とし、10分間隔及び0~60分の集計を行った。

6.10.3 体重測定

主群の雄は投与第1、4、8、11、15、18、22、25、29、32、36、39、42及び剖検日に、回復群の雌雄は主群の雄の測定日に加え、回復第1、4、8、11、14及び剖検日に、主群の雌は投与第1、4、8、11、15日（未交尾動物は投与18及び22日（交配中））、

妊娠 0、4、7、11、14、17 及び 20 日、授乳 0 及び 4 日並びに剖検日に体重を測定した。なお、午後の分娩観察時に分娩の終了が確認された個体の授乳 0 日の体重測定（13:56~16:52）を除き、08:03~11:14 の間に行った。剖検日には相対器官重量算出のため、前日から約 16 時間絶食させた後の体重を測定した。

6.10.4 摂餌量測定

全個体について、主群の雄は投与第 1、4、8、11、15、32、36、39 及び 42 日に、回復群の雌雄は主群の雄の測定日に加え回復第 1、4、8、11 及び 14 日に、主群の雌は投与第 1、4、8、11 及び 15 日、妊娠 1、4、7、11、14、17 及び 20 日並びに授乳 2 及び 4 日に残餌量を測定し、前日の給餌量から 1 匹当たりの 1 日摂餌量を算出した。給餌量及び残餌量の測定は 08:15~11:16 の間に行った。

6.10.5 膀胱検査

主群の全個体について、投与開始翌日から交尾が認められるまで毎日（午前中）膀胱を採取した。交配前投与期間中は膀胱像を発情前期（P）、発情期（E）、発情後期（M）及び発情休止期（D）に分類し、発情期像発現回数及び発情期から次の発情期までの日数（性周期）を調べた。また、観察雌個体数に対する性周期異常を示した個体数の割合を調べた。なお、P→E→M→D（→P）の順序で周期的变化を示し、4 又は 5 日の周期を繰り返す個体を正常、それ以外を性周期異常とした。交配期間中は膀胱内の精子の有無を調べた。

6.10.6 交配方法

交配前投与期間終了後、主群の同一投与群の雌雄を 1:1 で終夜同居させ、翌朝、膀胱形成あるいは膀胱中に精子を確認したものを交尾成立とみなし、この日を妊娠 0 日とした。

6.10.7 分娩及び授乳観察

1) 母動物の観察

交尾確認雌動物は全例自然分娩させ、分娩状態の異常の有無を観察した。分娩終了の確認は妊娠 21 日から妊娠 23 日まで 1 日 2 回（午前、午後）を行い、妊娠期間を 0.5 日単位で算出したが、帳票への記載は 1 日単位とした。分娩が午後 5 時までに終了していた場合、その日を授乳 0 日とした。

分娩が終了した母動物は胎盤及び羊膜の処理の有無を観察し、分娩終了日を授乳 0 日とし、授乳 4 日まで出生児を授乳させ、児集め、営巣及び授乳を指標として授乳状態を観察した。

分娩した母動物は、授乳 4 日から一夜（約 16~20 時間）絶食させ、授乳 5 日の時点で各群 5 匹を血液学検査及び血液化学検査のための採血後に、残りの動物はエーテル麻酔下で腹大動脈切断により放血致死させた後に、それぞれ剖検を行い、黄体数及び

着床痕数を数えた。

2) 出生児の観察

出生日に出生児数、死産児数を数えた。出生児は外表異常の有無を観察し、性別を判定し、体重を測定した後、母動物に授乳させた。出生児の生死の観察は授乳4日まで毎日1回行った。なお、死産児及び死亡児は廃棄した。

授乳4日に体重を測定した後、全例をエーテル麻酔下で放血致死させ、剖検を行い、胸部・腹部を含む器官・組織の異常の有無を調べた。なお、出生児の体重は個体別に測定し、各腹単位で雌雄別に平均値を算出した。

6.10.8 尿検査（摂水量測定を含む）

投与終了週（投与6週、投与第37~38日）及び回復終了週（回復2週、回復第9~10日）に雄の各群5例（回復群のある群は回復群の全個体、その他の群は動物番号が若い5例）について、それぞれ採尿器をセットしたケージに収容し、絶食・自由摂水下で4時間尿を、次いで自由摂食・自由摂水下でその後の20時間尿を採取した。検査項目は以下の通りである。なお、採取した最初の4時間尿についてpH以下沈渣までの検査と尿量を、その後に得られた20時間尿を用いて浸透圧及び尿量の測定を行った。尿量は4時間の尿量と20時間の尿量を合計して1日量を算出した。摂水量は、採尿器をセットしたケージに収容した状態で前日からの1日の摂取量を給水瓶を用いて測定した。

<u>検査項目</u>	<u>測 定 方 法</u>
pH	オーションスティックス-7EA 試験紙 [アークレイ株式会社] ^{a)}
たん白質	オーションスティックス-7EA 試験紙 [アークレイ株式会社] ^{a)}
ケトン体	オーションスティックス-7EA 試験紙 [アークレイ株式会社] ^{a)}
グルコース	オーションスティックス-7EA 試験紙 [アークレイ株式会社] ^{a)}
潜血	オーションスティックス-7EA 試験紙 [アークレイ株式会社] ^{a)}
ビリルビン	オーションスティックス-7EA 試験紙 [アークレイ株式会社] ^{a)}
ウロビリノーゲン	オーションスティックス-7EA 試験紙 [アークレイ株式会社] ^{a)}
色調	肉眼観察
沈渣	鏡検法
尿量（4時間量）	目盛付スピッツ管を用いた容量測定（単位：mL）
浸透圧	冰点降下法 ^{b)} （単位：mOsm/kg）
尿量（20時間量）	メスシリンドラーを用いた容量測定（単位：mL）
摂水量（24時間量）	重量測定
使用測定機器	

a) : AUTION MINI™ AM-4290 (アークレイ株式会社)

b) : 自動浸透圧測定装置 オートアンドスタッフ OM-6030 (アークレイ株式会社)

6.10.9 血液学検査

最終投与翌日及び回復期間終了日に、前日から一夜（約16~20時間）絶食させた各群雌雄各5匹^{注1)}について、エーテル麻酔下に開腹し、腹大動脈からEDTA-2K加採血瓶（SB-41：シスメックス株式会社）に血液を採取し、以下の項目について測定した。なお、採血した全例について、May-Grünwald-Giemsa染色法による血液塗抹標本を作製した。ただし、プロトロンビン時間、活性化部分トロンボプラスチン時間及びフィブリノーゲン量については、3.8%クエン酸ナトリウム溶液加試験管（血液9容に対し1容の割合）に採取した血液を遠心分離（約3,000 rpm、約1,600×g、約10分間）して得られた血漿を用いて測定した。

検査項目	測定方法	単位
赤血球数(RBC)	2角度レーザーフローサイトメトリー法 ^{c)}	10 ⁴ /μL
ヘモグロビン量(Hb)	シアノメトヘモグロビン変法 ^{c)}	g/dL
ヘマトクリット値(Ht)	赤血球数及び平均赤血球容積から算出 ^{c)}	%
平均赤血球容積(MCV)	2角度レーザーフローサイトメトリー法 ^{c)}	fL
平均赤血球血色素量(MCH)	赤血球数及びヘモグロビン量から算出 ^{c)}	pg
平均赤血球血色素濃度(MCHC)	ヘモグロビン量及びヘマトクリット値から算出 ^{c)}	g/dL
網赤血球率(Reticulocyte)	RNA染色によるレーザーフローサイトメトリー法 ^{c)}	%
血小板数(Platelet)	2角度レーザーフローサイトメトリー法 ^{c)}	10 ⁴ /μL
白血球数(WBC)	2角度レーザーフローサイトメトリー法 ^{c)}	10 ² /μL
白血球百分率 ^{注2)}	ペルオキシダーゼ染色によるフローサイト メトリー法+2角度レーザーフローサイトメトリー法 ^{c)}	%
各自血球細胞の絶対数 ^{注2)}	ペルオキシダーゼ染色によるフローサイト メトリー法+2角度レーザーフローサイトメトリー法 ^{c)}	10 ² /μL
プロトロンビン時間 (PT)	クロット法 ^{d)}	s
活性化部分トロンボプラスチン時間 (APTT)	クロット法 ^{d)}	s
フィブリノーゲン量	トロンボプラスチン法 ^{d)}	mg/dL
使用測定機器		

c) : 総合血液学検査装置 アドヴィア 120 (Siemens Medical Solutions Diagnostics, New York, USA)

d) : 血液凝固自動測定装置 ACL 100 (Instrumentation Laboratory)

注1) : 主群の検査対象各群雌雄各5匹は以下の例とした。

雄	雌
1001~1005	1101、1102、1104、1107、1111
2001~2005	2101、2102、2103、2107、2109
3001~3005	3101、3102、3103、3104、3106
4001~4005	4101、4102、4103、4106、4110

注 2)： 好中球、好酸球、好塩基球、リンパ球、単球及び大型非染色球

6.10.10 血液化学検査

血液学検査用試料と同時に採取した血液を凝固促進剤入り試験管（ベノジェクト II-オートセット：テルモ株式会社）に取り、遠心分離（約 3000 rpm、約 1,600×g、約 10 分間）して得られた血清を用いて以下の項目について測定した。ただし、AST、ALT、LDH 及び γ -GTP については、ヘパリン加試験管（血液 1 mL 当たり約 20 単位のヘパリン）に採取した血液を遠心分離（約 3,000 rpm、約 1,600×g、約 10 分間）して得られた血漿を用いて測定した。

<u>検査項目</u>	<u>測 定 方 法</u>	<u>単 位</u>
AIP	Bessey-Lowry 法 ^{e)}	IU/L
総コレステロール	CEH-COD-POD 法 ^{e)}	mg/dL
トリグリセライド	LPL-GK-GPO-POD 法 ^{e)}	mg/dL
リン脂質	PLD-ChOD-POD 法 ^{e)}	mg/dL
総ビリルビン	ビリルビンオキシダーゼ法 ^{e)}	mg/dL
グルコース	グルコースデヒドログナーゼ法 ^{e)}	mg/dL
尿素窒素	Urease-LEDH 法 ^{e)}	mg/dL
クレアチニン	Creatininase-creatinase-sarcosine-oxidase-POD 法 ^{e)}	mg/dL
ナトリウム	イオン選択電極法 ^{e)}	mmol/L
カリウム	イオン選択電極法 ^{e)}	mmol/L
塩素	イオン選択電極法 ^{e)}	mmol/L
カルシウム	OCPC 法 ^{e)}	mg/dL
無機リン	モリブデン酸法 ^{e)}	mg/dL
総たん白質	Biuret 法 ^{e)}	g/dL
アルブミン	BCG 法 ^{e)}	g/dL
A/G 比	総たん白質及びアルブミンから算出	
AST(GOT)	UV-rate 法 ^{e)}	IU/L
ALT(GPT)	UV-rate 法 ^{e)}	IU/L
LDH	UV-rate 法 ^{e)}	IU/L
γ -GTP	L- γ -グルタミル-3-カルボキシ-4-ニトロアニリド ^{e)} 法 ^{e)}	IU/L
使用測定機器		

e)：臨床化学自動分析装置 TBA-120FR 形（株式会社東芝）

6.10.11 病理学検査

1) 剖検及び器官重量測定

すべての生存動物について、最終投与翌日及び回復期間終了日の血液・血液化学検査に供した動物（各群雌雄各5匹）は採血後に、その他の動物はエーテル麻酔下で腹大動脈切断により放血致死させた後に、それぞれ体外表・頭部・胸部・腹部を含む全身の器官・組織の肉眼による詳細な病理解剖を行い、結果を記録した。なお、雌動物（母動物）は授乳5日の剖検時に黄体数及び着床痕数を数えた。次いで、血液・血液化学検査に供した各群雌雄各5匹について、以下に示す器官（精巣及び精巣上体は全例）の重量（絶対重量）を測定するとともに、絶対重量と剖検時の体重から体重100g当たりの相対重量を算出した。なお、*印をつけた両側性の器官については左右別々に測定し、その合計値で評価した。

脳、甲状腺*（上皮小体を含む）、胸腺、心臓、肝臓、脾臓、腎臓*、副腎*、精巣*、精巣上体*

2) 病理組織学検査

全動物について、以下に示す器官・組織をリン酸緩衝10vol%ホルマリン液で固定、保存した（固定時に肺にはリン酸緩衝10vol%ホルマリン液を注入した。ただし、精巣及び精巣上体はブアン液で固定した後リン酸緩衝10vol%ホルマリン液で保存した）。次いで、パラフィン包埋した後、切片とし（下線を施した器官・組織は固定・保存のみとした）、ヘマトキシリン・エオジン（H・E）染色を行い、対照群及び高用量群の血液・血液化学検査に供した雌雄各5匹並びに全動物の肉眼的異常部位について、鏡検した（両側性の器官については両側を摘出し、片側を鏡検）。その結果、高用量群の精巣に被験物質投与の影響が認められなかつたため、代表例のPAS・ヘマトキシリン染色は行わなかつた。

大脑、小脳、下垂体、脊髄（胸部）、坐骨神経、甲状腺、上皮小体、副腎、胸腺、脾臓、顎下リンパ節、腸間膜リンパ節、心臓、肺（気管支を含む）、胃、十二指腸、空腸、回腸、盲腸、結腸、直腸、肝臓、腎臓、膀胱、精巣、精巣上体、卵巣、子宮、精嚢、胸骨（骨髄を含む）、大腿骨（骨髄を含む）、肉眼的異常部位、個体識別部（耳介）

6.11 統計解析

1) 以下の式により各パラメータを算出した。

$$\text{交尾率}(\%) = (\text{交尾動物数}/\text{同居動物数}) \times 100$$

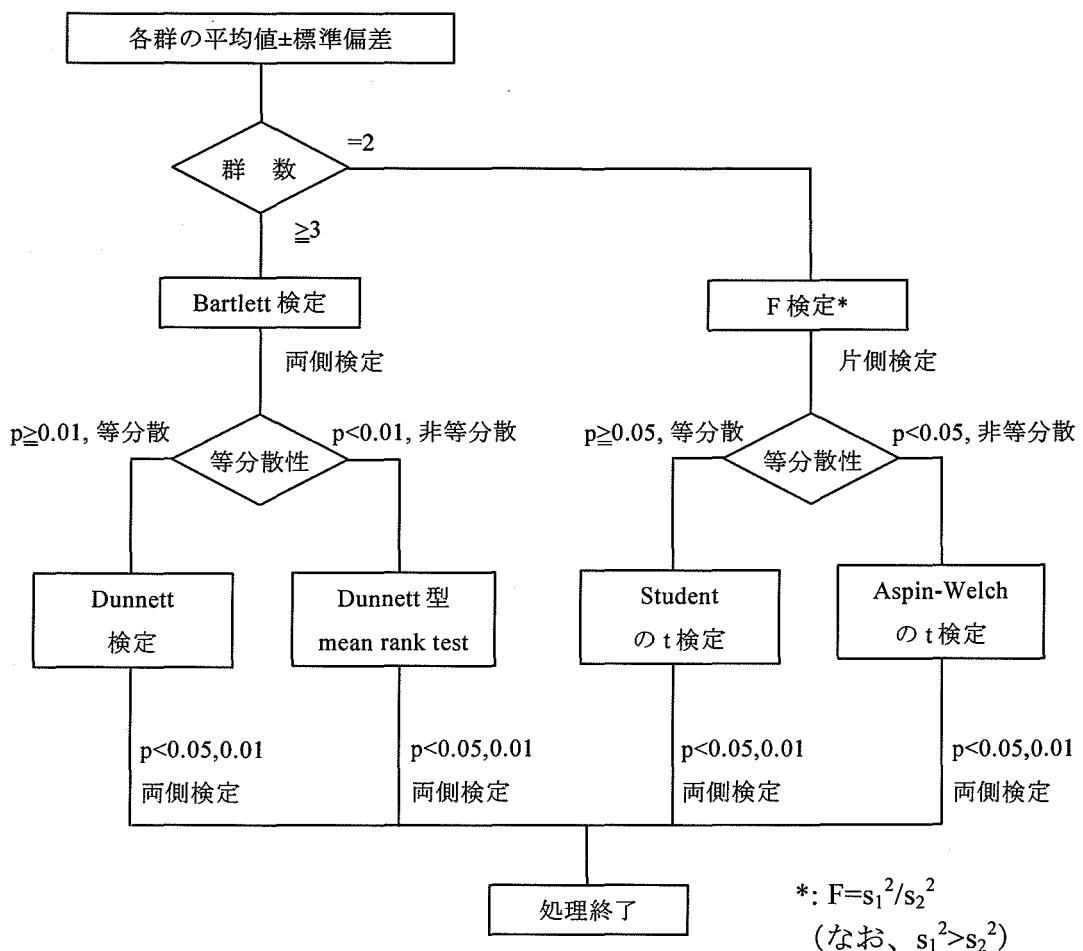
$$\text{受胎率}(\%) = (\text{妊娠した雌の数}/\text{交尾した雌の数}) \times 100$$

$$\text{授精率}(\%) = (\text{雌を妊娠させた雄動物数}/\text{交尾した雄の数}) \times 100$$

$$\text{妊娠期間(日)} = \text{妊娠0日から分娩した日までの日数}$$

出産率(%)= (出生児出産雌数/妊娠雌数) ×100
着床率(%)= (着床痕数/黄体数) ×100
死産児率(%)= (死産児数/総出産児数) ×100
出生率(%)= (出生児数/総出産児数) ×100
外表異常率(%)= (外表異常児数/出生児数) ×100
性比=雄数/ (雄数+雌数)
出生児生存率(%)= (授乳4日生存児数/出生児数) ×100

- 2) 体重、摂餌量、摂水量、発情期像発現回数、性周期、交尾までに要した日数、妊娠期間、黄体数、着床痕数、出生児数、オープンフィールド内観察（排糞数、立ち上がり回数）、機能検査（着地開脚幅）、握力及び自発運動量、尿検査の定量的項目、血液学検査、血液化学検査及び器官重量は次に示す模式図の方法に従って検定した。なお、出生児体重（雌雄別）については、母動物ごとの平均値を求めた後、検定を行った^{2), 3)}。
- 3) 着床率、死産児率、出生率、外表異常率、出生児生存率は母動物ごとに率を求めた後、次に示す模式図の方法に従って検定した。³⁾



- 4) 交尾率、授精率、受胎率、出産率、出生児の性比は、各群の交尾動物数、雌を妊娠させた雄動物数、妊娠雌動物数、生存児出産雌動物数、雄生存児数、雌生存児数の合計を求め、イエーツの連続修正による χ^2 検定を行った（有意水準 0.05 及び 0.01、両側）。ただし、期待度数が 5 以下のセルがみられる場合には Fisher の直接確率計算法により検定を行った（有意水準 0.05 及び 0.01、両側）。なお、聴覚反応、接近反応、接触反応、痛覚反応、瞳孔反射、空中正向反射については、全例が正常な反応を示したため、統計解析は行わなかった。

7. 試験結果

7.1 一般状態 (Table 1-1~1-7、Appendix 1-1~1-22)

主群及び回復群の動物とも異常はなかった。

7.2 詳細な一般状態の観察、機能検査、握力測定及び自発運動量の測定 (Fig. 1~5、Table 2-1~2-84、Appendix 2-1~2-258)

1) ホームケージ内観察 (Table 2-1~2-23、Appendix 2-1~2-72)

主群及び回復群のいずれの動物にも異常はなかった。

2) 手に持つての観察 (Table 2-24~2-46、Appendix 2-73~2-144)

主群及び回復群のいずれの動物にも異常はなかった。

3) オープンフィールド内観察 (Table 2-47~2-69、Appendix 2-145~2-216)

1000 mg/kg 投与群では、雄で投与 1 週の立ち上がり回数に有意な高値が認められたが、軽微であり、投与 2 週以降の検査に同変化がみられないことから、偶発的変化と判断した。その他の検査項目では主群及び回復群のいずれの動物にも異常はなかった。

4) 機能検査 (Table 2-70~2-74、Appendix 2-217~2-230)

主群及び回復群のいずれの動物にも異常はなかった。また、着地開脚幅には対照群と各投与群との間に有意差はなく、空中正向反射にも異常はなかった。

5) 握力測定 (Table 2-75~2-79、Appendix 2-231~2-244)

主群及び回復群とも対照群と各投与群との間に有意差はなかった。

6) 自発運動量の測定 (Fig. 1~5、Table 2-80~2-84、Appendix 2-245~2-258)

主群及び回復群とも対照群と各投与群との間に有意差はなかった。

7.3 体重 (Fig. 6~8、Table 3-1~3-7、Appendix 3-1~3-22)

主群及び回復群の雌雄ともに、対照群と各投与群との間に有意差はなかった。

7.4 摂餌量 (Fig. 9~11、Table 4-1~4-7、Appendix 4-1~4-22)

主群及び回復群の雌雄ともに被験物質投与による影響は認められなかった。

なお、300 mg/kg 投与群の雄で投与前日から投与 1 日の投与前の摂餌量に有意な低値が認められたが、被験物質投与に関連のない偶発的変化であった。また、300 mg/kg 投与群の雌で妊娠 11 日に有意な高値がみられたが、一時的な変化で関連する体重推移への影響はみられないことから偶発的変化と判断した。

7.5 尿検査（摂水量測定を含む）（Table 5-1~5-8、Appendix 5-1~5-18）

定性項目については、主群及び回復群とも異常はなかった。

定量項目については、いずれの検査項目においても対照群と各投与群との間に差はなかった。

7.6 血液学検査（Table 6-1~6-8、Appendix 6-1~6-8）

1) 投与期間終了時検査

主群及び回復群の雌雄ともに被験物質投与による影響は認められなかった。なお、300 mg/kg 投与群では、雄で MCV の有意な低値が認められたが、軽微であり、用量との関連のない変化であることから、生理学的変動範囲内の変化と判断した。また、1000 mg/kg 投与群では、雄で血小板数の有意な低値、雌でフィブリノゲン量の有意な低値が認められたが、いずれも軽微であり、他の検査項目に異常がないことから生理学的変動範囲内の変化と判断した。

2) 回復期間終了時検査

1000 mg/kg 投与群では、雄で赤血球数の有意な低値、PT 及び APTT の有意な延長、好酸球比率の有意な高値が認められた。しかし、投与期間終了時検査に認められない変化であり、赤血球数、PT 及び APTT の検査値は投与期間終了時検査の対照群と同等度の値であることから、生理学的変動範囲内の変化と判断した。

7.7 血液化学検査（Table 7-1~7-8、Appendix 7-1~7-8）

1) 投与期間終了時検査

主群及び回復群の雌雄ともに被験物質投与による影響は認められなかった。

なお、100 mg/kg 投与群の雌及び 300 mg/kg 投与群の雌雄で塩素の有意な低値が認められたが、軽微であり、用量との関連がないことから、生理学的変動範囲内の変化と判断した。

2) 回復期間終了時検査

いずれの検査項目においても対照群と各投与群との間に有意差はなかった。

7.8 器官重量（Table 8-1~8-8、Appendix 8-1~8-30）

1) 投与期間終了時検査

いずれの器官においても対照群と各投与群との間に有意差はなかった。

2) 回復期間終了時検査

以下の器官に対照群との間に有意差が認められたが、いずれも軽度な変化であり、投与期間終了時検査に異常がみられず、病理組織学検査で被験物質に起因すると考えられる変化がみられないことから偶発的変化と判断した。

脾臓	:	相対重量の有意な低値が 1000 mg/kg 投与群の雄にみられた。
副腎	:	絶対及び相対重量の有意な高値が 1000 mg/kg 投与群の雄に認められた。
肝臓	:	相対重量の有意な低値が 1000 mg/kg 投与群の雌に認められた。

7.9 剖検所見 (Table 9-1、9-2、Appendix 9-1~9-86、10-1~10-20)

1) 投与期間終了時検査

以下の器官・組織に所見がみられたが、出現頻度及び病理学的性状から偶発的変化と考えられた。

精巣上体	:	小型化が 300 mg/kg 投与群の 1 例にみられた。
胃	:	腺胃の暗赤色巣が対照群、300 及び 1000 mg/kg 投与群の雌にそれぞれ 2、1 及び 2 例にみられた。
精巣	:	小型化が 300 mg/kg 投与群の 1 例にみられた。

2) 回復期間終了時検査

肝臓	:	横隔膜ヘルニア結節が 1000 mg/kg 投与群の雌 1 例にみられた。
----	---	---------------------------------------

7.10 病理組織学検査 (Table 10-1~10-4、Appendix 9-1~9-86、10-1~10-20)

1) 投与期間終了時検査

以下の所見がみられたが、出現状態及び病理組織学的性状から偶発病変と考えられた。

精巣上体	:	中等度な精子減少が 300 mg/kg 投与群の 1 例（剖検時に小型化がみられた個体）にみられた。
心臓	:	軽微な心筋症が対照群の雌 1 例及び 1000 mg/kg 投与群の雄 1 例にみられた。
腎臓	:	軽微又は軽度な尿細管再生が対照群の雌雄各 1 例及び 1000 mg/kg 投与群の雄 2 例と雌 1 例に、軽微な腎乳頭の石灰化が対照群の雌雄各 1 例と 1000 mg/kg 投与群の雌 1 例に、軽微な皮質の石灰化が 1000 mg/kg 投与群の雄 1 例にみられた。
肝臓	:	軽微な門脈周囲肝細胞の空胞化が対照群の雄 2 例と雌 3 例及び 1000 mg/kg 投与群の雄 1 例と雌 2 例に、軽微な髓外造血が対照群の雌 2 例に、軽微又は軽度な微小肉芽腫が対照群及び 1000 mg/kg 投与群でそれぞれ雄 5 例と雌 3 例にみられた。
肺（気管支を含む）	:	軽微な肺胞の出血が対照群の雌 1 例に、肺胞に軽微な

マクロファージの出現が対照群の雄 1 例と雌 4 例及び 1000 mg/kg 投与群の雄 2 例と雌 1 例にみられた。

脾臓 : 軽微又は軽度な髓外造血が対照群の雄 4 例と雌 5 例及び 1000 mg/kg 投与群の雄 3 例と雌 4 例にみられた。

胃 : 軽微又は軽度な腺胃の糜爛が対照群、300 及び 1000 mg/kg 投与群の雌でそれぞれ 2, 1 及び 2 例にみられた。

精巣 : 軽度な精細管の萎縮が 300 mg/kg 投与群の 1 例（剖検時に小型化がみられた個体）にみられた。

甲状腺 : 後鰓体の残留が 1000 mg/kg 投与群の雌 3 例にみられた。

2) 回復期間終了時検査

以下の所見がみられたが、出現頻度及び病理組織学的性状から偶発病変と考えられた。

肝臓 : 軽度な横隔膜ヘルニア結節が 1000 mg/kg 投与群の雌 1 例（剖検時に横隔膜ヘルニア結節がみられた個体）にみられた。

7.11 性周期 (Table 11、Appendix 11-1~11-4)

性周期異常の動物はみられず、平均性周期日数には対照群と各投与群との間に差は認められなかった。

7.12 交配成績 (Table 12、Appendix 12-1~12-4)

1000 mg/kg 投与群の 1 組が交配開始後 8 日に、他の組み合わせは交配開始後 4 日までに交尾が認められ、雌全例が妊娠した。したがって、交尾率、授精率及び受胎率には対照群と各投与群との間に差は認められなかった。

7.13 分娩成績及び分娩・授乳状態 (Table 13、Appendix 13-1~13-4)

妊娠動物の分娩状態では、妊娠 21~23 日に全例が正常に分娩し、出産率、妊娠期間、黄体数、着床痕数、着床率、死産児率、出生児数及び出生率には対照群と各投与群との間に差は認められなかった。

授乳状態では、いずれの母動物にも営巣、哺育行動に異常はなかった。

7.14 出生児の観察 (Table 14、Appendix 14-1~14-4)

性比及び出生時体重には対照群と各投与群との間に差はなく、外表異常はみられなかった。

7.15 出生児の生存率 (Table 15、Appendix 15-1~15-4)

授乳期間中の死亡児は対照群で 4 例、100、300 及び 1000 mg/kg 投与群で 0、6 及び 4 例であった。したがって、生後 4 日生存率については対照群と各投与群との間に差

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はなかった。

7.16 出生児の体重 (Table 16、Appendix 16-1~16-4)

出生時及び授乳 4 日の雌雄体重には対照群と各投与群との間に差は認められなかつた。

7.17 出生児の授乳 4 日剖検所見 (Table 17、Appendix 17-1~17-4)

胸腺の頸部残留が 300 mg/kg 投与群の雄 1 例にみられた。その他の出生児にも異常はみられなかった。

8. 考察

ペルフルオロヘプタンの 0 (対照群 : 1%Tween80 添加 1 w/v% CMC 溶液) 、 100、 300 及び 1000 mg/kg を、 Sprague-Dawley 系 SPF ラットの雄には交配前 14 日間及び交配期間を通して剖検前日まで (42 日間) 、 雌には交配前 14 日間及び交配期間並びに妊娠期間を通して授乳 4 日まで (42~48 日間) 投与し、 反復投与毒性及び生殖発生毒性を検討した。更に、 0 及び 1000 mg/kg 投与群については 42 日間投与した後、 14 日間の回復期間を設け、 毒性変化の可逆性を検討した。

8.1 反復投与毒性

一般状態、 詳細な一般状態の観察、 機能検査、 握力測定、 自発運動量の測定、 体重、 摂餌量、 尿検査 (摂水量含む) 、 血液学検査、 血液化学検査、 器官重量及び病理学検査に被験物質投与による影響は認められなかった。

8.2 生殖発生毒性

性周期、 交尾までに要した日数、 交尾率、 授精率及び受胎率には被験物質投与の影響は認められなかった。出産率、 妊娠期間、 黄体数、 着床痕数、 着床率、 死産児率、 出生児数、 出生率及び性比に被験物質投与の影響は認められず、 授乳期間中の授乳状態にも異常が認められないことから、 1000 mg/kg 投与群においても雌雄動物の交尾能、 授精能及び受胎能、 母動物の妊娠維持、 分娩及び哺育行動などの生殖機能への影響はないと判断した。

出生児では、 外表観察、 出生時及び授乳 4 日の体重及び授乳 4 日剖検所見及び生存率に被験物質投与による変化は認められなかった。

これらの結果から、 ペルフルオロヘプタンの反復投与毒性及び生殖発生毒性に対する無影響量はいずれも 1000 mg/kg/day と判断した。

9. 文献

- 1) [REDACTED] ペルフルオロヘプタンのラットを用いた 14 日間反復経口投与毒性試験（予備試験）（株式会社ボゾリサーチセンター、試験番号：C-R091、2008年）
- 2) Shayne C. Gad and Carroll S. Weil (1994) : Chapter 7. Statistics for Toxicologists, In Principles and Methods of Toxicology (A. Wallace Hayes, ed.), 3rd ed., pp.221-274, Raven Press, Ltd., New York.
- 3) 佐久間昭 (1981) : 薬効評価—計画と分析-II, pp.23-27, 387-389, 東京大学出版会, 東京.



Certificate of Analysis

Product No: L16979

Product: Perfluoroheptanes, mixed isomers, 98%

We hereby certify that batch 10141168 of the above product has been tested with the following results:

Appearance: Clear colourless liquid

Refractive index: <1.3000

Assay (GC): 99.8%

GC/MS Analysis: Conforms

Date of Analysis: 7 August, 2008

Date printed: 12 August, 2008

This document has been electronically generated and does not require a signature.

報告書

整理 No.T0151

2009年 02月 23日

株式会社ボゾリサーチセンター

御殿場研究所 研究部

東京化成工業株式会社 深谷工場

分析センター

〒366-0816 埼玉県深谷市樋合 725 番地

TEL 048-571-3466

FAX 048-571-1810



ペルフルオロヘプタン 2点の分析につきましてご報告致します。

T0151-1

1-1. 分析試料

Perfluoroheptanes,mixed isomers ロット : R-991 (10141168) [REDACTED]

1-2. 純度(GC)

(1) 分析条件

カラム : 6% Cyanopropylphenyldimethylpolysiloxane $1.8 \mu m \times 60m \times 0.32mm$

カラム 温度 : 最初 35°Cで 10 分間保ち、その後 20°C/min で 195°Cまで昇温し、
その温度に 7 分間保つ。

気化室温度 : 150°C

検出器温度 : 250°C

キャリアガス : ヘリウム 線速度 30cm/sec.

検出器 : FID

注入法 : スプリット法 スプリット比 (1 : 300)

注入量 : 試料 $0.1 \mu l$

定量法 : 未補正面積百分率法

機器 : HP6890

(2) 結果 (未補正面積百分率)

①93.80% ②93.91% 平均 93.9% (主成分ピクの合計)

添付データ 4枚

T0151-2

2-1. 分析試料

Perfluoroheptanes,mixed isomers ロット : C-R092 (10133215) [REDACTED]

2-2. 純度(GC)

(1) 分析条件

カラム : 6%Cyanopropylphenyldimethylpolysiloxane $1.8\mu m \times 60m \times 0.32mm$ カラム 温度 : 最初 $35^{\circ}C$ で 10 分間保ち、その後 $20^{\circ}C/min$ で $195^{\circ}C$ まで昇温し、

その温度に 7 分間保つ。

気化室温度 : $150^{\circ}C$ 検出器温度 : $250^{\circ}C$ キャリアガス : ヘリウム 線速度 $30cm/sec.$

検出器 : FID

注入法 : スプリット法 スプリット比 (1 : 300)

注入量 : 試料 $0.1\mu l$

定量法 : 未補正面積百分率法

(2) 結果 (未補正面積百分率)

①93.71% ②93.80% 平均 93.8% (主成分ピーカの合計)

添付データ 4 枚

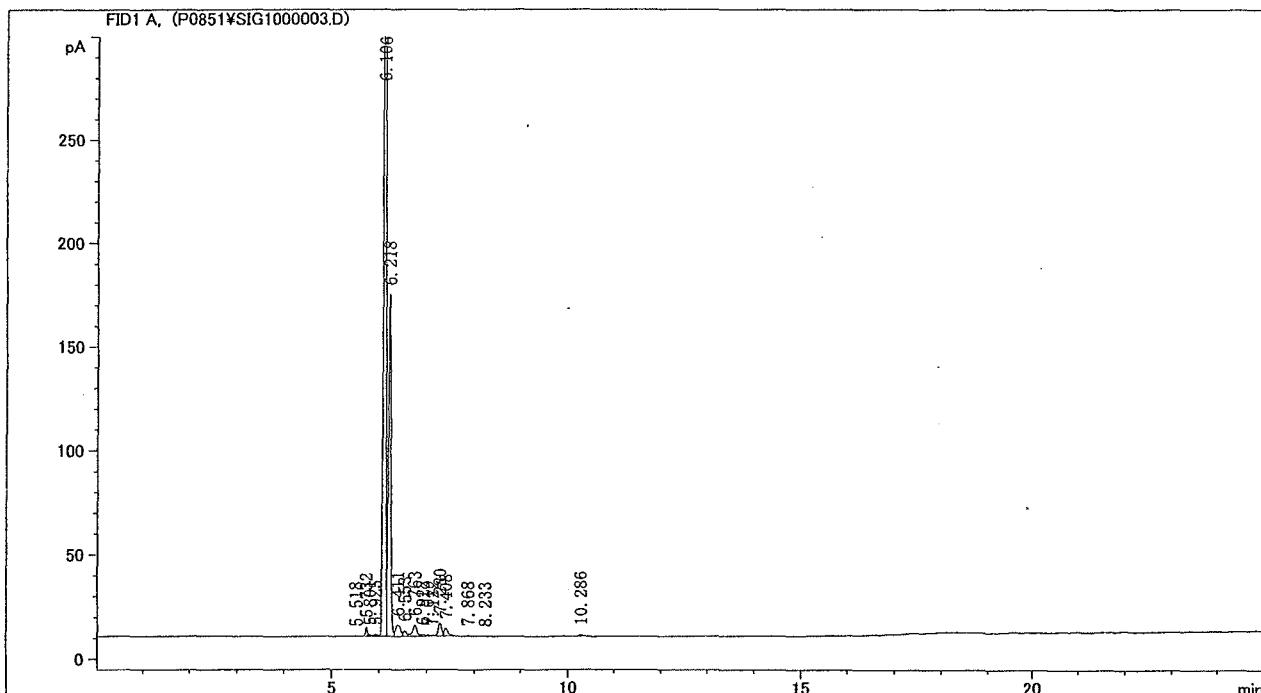
この報告書に関するご質問は [REDACTED] までお願い致します。

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添付資料 2 (3/6)

データ ファイル C:\CHEM32\1\DATA\P0851\SIG1000003.D
サンプル名 : T0151

=====
測定オペレータ :
分析機器 : 機器 1 口ケーション : バイアル 102
注入日 : 19-Feb-09, 14:14:21 注入 : 1
注入量 : マニュアル
メソッド : C:\CHEM32\1\METHODS\P0851.M
最終変更 : 2009/02/19 11:36:41 午前
サンプル情報 : BUNCE
Perfluorohexane (Lot. R-991)



=====
面積パーセント レポート
=====

表示順 : シグナル
倍率 : 1.0000
希釈率 : 1.0000
ISTD に対し倍率と希釈率ファクタを使用

シグナル 1: FID1 A,

#	RT [min]	タイプ	ピ-ク幅 [min]	面積 [pA*s]	高さ [pA]	面積 %
1	5.518	BB	0.0349	5.28592e-1	2.36145e-1	0.01772
2	5.732	BV	0.0400	11.06239	4.36007	0.37092
3	5.801	VV	0.0514	3.06980	8.57271e-1	0.10293
4	5.925	VV	0.0674	3.93730	8.80774e-1	0.13202
5	6.106	VV	0.0491	2153.49463	691.33508	72.20573
6	6.218	VV	0.0618	643.95825	164.06921	21.59164
7	6.411	VV	0.1217	41.24178	5.36630	1.38282
8	6.553	VV	0.0724	13.30041	2.75071	0.44596
9	6.763	VV	0.0949	33.56716	5.28234	1.12549
10	6.922	VV	0.0796	4.82862	8.74519e-1	0.16190
11	7.019	VV	0.0629	2.63588	6.13945e-1	0.08838
12	7.122	VV	0.0706	3.21883	6.23766e-1	0.10793
13	7.280	VV	0.0784	33.25379	6.55809	1.11498

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添付資料 2 (4/6)

データ ファイル C:\CHEM32\1\DATA\P0851\SIG1000003.D

サンプル名 : T0151

ピーク #	RT [min]	タイプ	ピーク幅 [min]	面積 [pA*s]	高さ [pA]	面積 %
14	7.408	VB	0.0948	24.82868	3.87036	0.83249
15	7.868	BB	0.1047	4.23145	5.51844e-1	0.14188
16	8.233	BB	0.0656	9.42149e-1	1.83222e-1	0.03159
17	10.286	BB	0.0873	4.34311	7.18938e-1	0.14562

トータル : 2982.44283 889.13259

=====*** レポート終了 ***=====

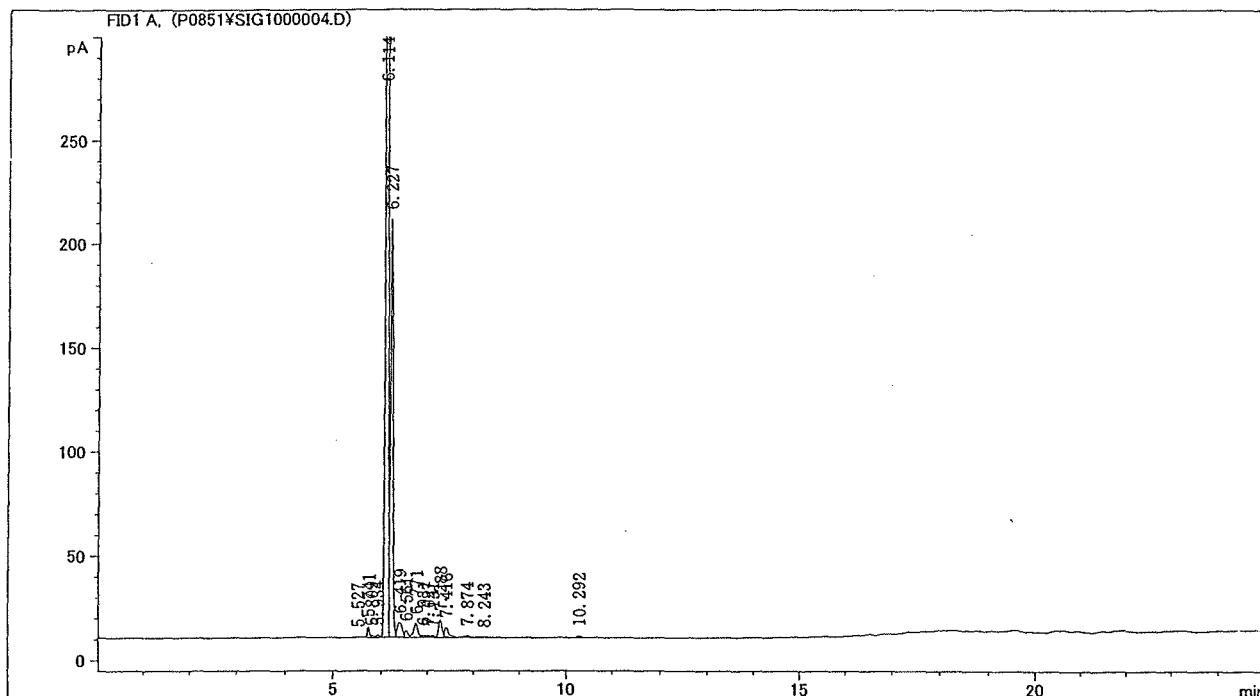
R-991

添付資料 2 (5/6)

データ ファイル C:\CHEM32\1\DATA\P0851\SIG100004.D

サンプル名 : T0151

=====
測定オペレータ :
分析機器 : 機器 1 口ケーション : バイアル 102
注入日 : 19-Feb-09, 15:45:00 注入 : 1
注入量 : マニュアル
メソッド : C:\CHEM32\1\METHODS\P0851.M
最終変更 : 2009/02/19 11:36:41 午前
サンプル情報 : BUNCE
Perfluorohexane (Lot. R-991)



=====
面積パーセント レポート
=====

表示順 : シグナル
倍率 : 1.0000
希釈率 : 1.0000
ISTD に対し倍率と希釈率ファクタを使用

シグナル 1: FID1 A,

ピ-ク #	RT [min]	タイプ	ピ-ク幅 [min]	面積 [pA*s]	高さ [pA]	面積 %
1	5.527	BB	0.0437	7.32217e-1	2.56177e-1	0.01897
2	5.741	BV	0.0470	14.68849	4.89575	0.38046
3	5.809	VV	0.0513	3.79000	1.04015	0.09817
4	5.934	VV	0.0709	5.41142	1.11823	0.14017
5	6.114	VV	0.0532	2796.26587	823.91046	72.42943
6	6.227	VV	0.0642	829.43365	200.84691	21.48416
7	6.419	VV	0.1209	52.35981	6.87116	1.35623
8	6.561	VV	0.0735	16.40638	3.32667	0.42496
9	6.771	VV	0.0955	42.17281	6.58590	1.09237
10	6.931	VV	0.0766	5.48556	1.01616	0.14209
11	7.027	VV	0.0652	2.91625	6.58791e-1	0.07554
12	7.131	VV	0.0744	3.59533	7.08187e-1	0.09313
13	7.288	VV	0.0799	43.07889	8.28197	1.11584

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添付資料 2 (6/6)

データ ファイル C:\CHEM32\1\DATA\P0851\SIG100004.D

サンプル名 : T0151

ピーカ #	RT [min]	タイプ VB	ピーカ幅 [min]	面積 [pA*s]	高さ [pA]	面積 %
14	7.416	VB	0.0964	31.91545	4.87519	0.82668
15	7.874	BB	0.1063	5.58972	7.09417e-1	0.14479
16	8.243	BB	0.0739	1.20958	2.19555e-1	0.03133
17	10.292	BB	0.0951	5.62469	9.13274e-1	0.14569

トータル : 3860.67610 1066.23395

=====

*** レポート終了 ***

被験液中ペルフルオロヘプタンの安定性・均一性試験成績書

試験番号 : A-2095
試験実施施設 : 株式会社ボゾリサーチセンター 御殿場研究所
測定日 : 2008年8月 5日 調製直後
2008年8月 8日 冷所2日間保存+室温24時間保存
2008年8月 14日 冷所8日間保存+室温24時間保存
測定法 : GC

被験物質 : ペルフルオロヘプタン (ロット番号 ; 10133215)
媒体 : 1%Tween80 添加 1%カルボキシメチルセルロース
ナトリウム溶液
調製濃度 : 1.00 及び 200 mg/mL
調製形態 : 懸濁液
調製日 : 2008年8月 5日
保存条件 : 褐色ガラス瓶にて冷所 (冷蔵庫内、許容範囲 : 1~
10°C) 2又は8日間保存後、室温24時間保存

測定対象物質 : ペルフルオロヘプタン

評価基準
安定性 : 残存率 (調製直後に対する保存後の測定濃度の平均値
の割合) が 100±10%以内。
均一性 : 変動係数 (CV) が 10%以下。

結果 : 次のページに表を示す。

判定 : 本被験液は、冷所8日間+室温24時間安定かつ均一で
あることが確認された。

試験責任者 : [REDACTED] 2008年 8月 25日

結果：被験液中ペルフルオロヘプタンの安定性及び均一性

調製濃度 (mg/mL)	測定濃度 (mg/mL)		
	調製直後	冷所 2 日間保存+ 室温 24 時間保存	冷所 8 日間保存+ 室温 24 時間保存
1.00	1.05	0.936	0.929
	1.06	0.963	0.909
	0.993	0.985	0.970
平均値	1.03	0.961	0.936
標準偏差	0.04	0.025	0.031
残存率 (%)	100	93.3	90.9
変動係数 (%)	3.9	2.6	3.3
200	197	201	186
	191	194	186
	210	197	181
平均値	199	197	184
標準偏差	10	4	3
残存率 (%)	100	99.0	92.5
変動係数 (%)	5.0	2.0	1.6

ペルフルオロヘプタン濃度・均一性試験成績書

試験番号 : R-991
試験実施施設 : 株式会社ボゾリサーチセンター 御殿場研究所
ステージ : 雄の投与第1週
測定日 : 2008年9月4日
測定法 : GC

測定試料

被験物質 : ペルフルオロヘプタン (ロット番号: 10141168)
媒体 : 1v/v%Tween 80 添加 1w/v%カルボキシメチルセルロースナトリウム溶液
表示値 : 20、60 及び 200 mg/mL
調製形態 : 懸濁液
調製日 : 2008年9月4日

測定対象物質 : ペルフルオロヘプタン

判定基準

濃度許容範囲 : 表示値に対する割合が $100 \pm 10\%$ 以内。
均一性許容範囲 : 変動係数 (CV) が 10% 以下。

結果 :

表示値 (mg/mL)	採取層	測定濃度 (mg/mL)	平均値±標準偏差	表示値に 対する割合 (%)	変動係数 (%)
20	上層	19.4	19.7±0.7	98.5	3.6
	中層	20.5			
	下層	19.1			
60	上層	57.6	59.0±3.4	98.3	5.8
	中層	56.6			
	下層	62.9			
200	上層	188	198±10	99.0	5.1
	中層	197			
	下層	208			

判定 : 適

化学分析責任者 : [REDACTED] 2008年9月17日

ペルフルオロヘプタン濃度・均一性試験成績書

試験番号 : R-991
試験実施施設 : 株式会社ボゾリサーチセンター 御殿場研究所
ステージ : 雄の投与最終週
測定日 : 2008年10月14日
測定法 : GC

測定試料

被験物質 : ペルフルオロヘプタン (ロット番号: 10141168)
媒体 : 1v/v% Tween 80 添加 1w/v% カルボキシメチルセルロースナトリウム溶液
表示値 : 20、60 及び 200 mg/mL
調製形態 : 懸濁液
調製日 : 2008年10月14日

測定対象物質 : ペルフルオロヘプタン

判定基準

濃度許容範囲 : 表示値に対する割合が $100 \pm 10\%$ 以内。
均一性許容範囲 : 変動係数 (CV) が 10% 以下。

結果 :

表示値 (mg/mL)	採取層	測定濃度 (mg/mL)	平均値±標準偏差	表示値に 対する割合 (%)	変動係数 (%)
20	上層	18.6	18.4 ± 0.3	92.0	1.6
	中層	18.1			
	下層	18.4			
60	上層	53.5	55.2 ± 1.5	92.0	2.7
	中層	55.9			
	下層	56.2			
200	上層	189	193 ± 4	96.5	2.1
	中層	192			
	下層	197			

判定 : 適

化学分析責任者 : [REDACTED] 2008年10月17日

R-991

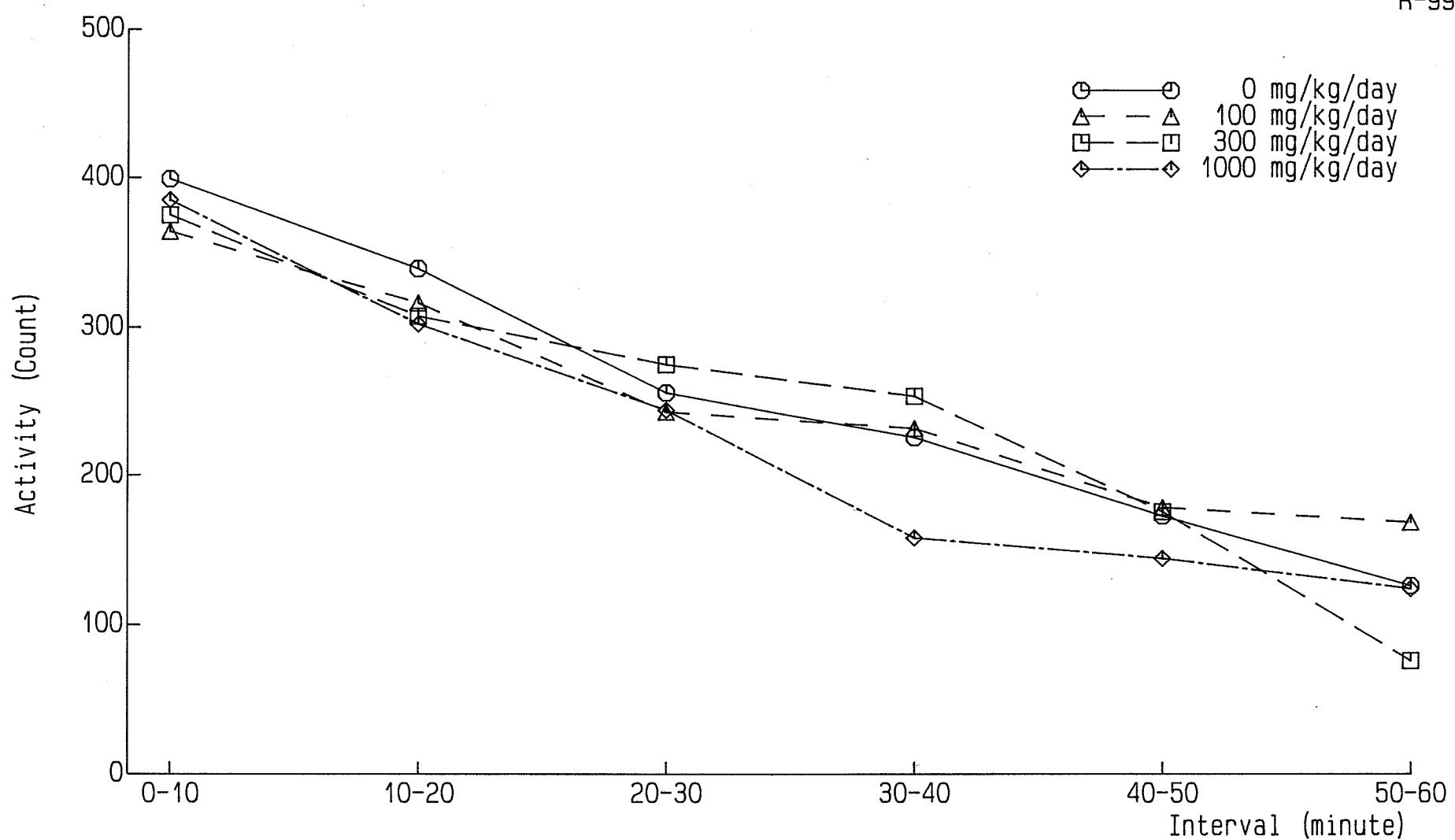


Fig.1 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane
Motor activity of male rats (Week 6 of administration)

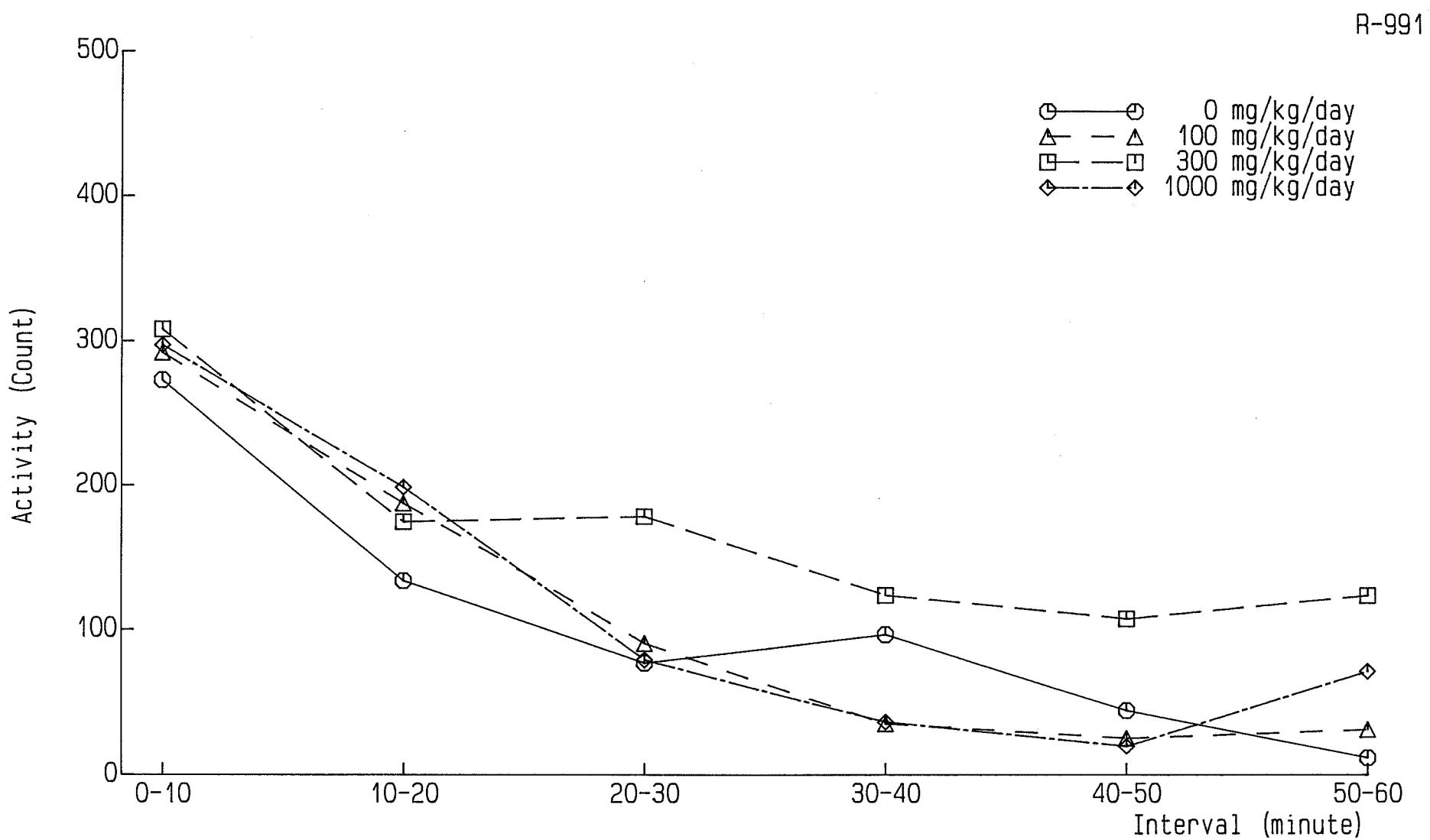


Fig.2 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane
Motor activity of female rats (Main group, Day 4 of lactation)

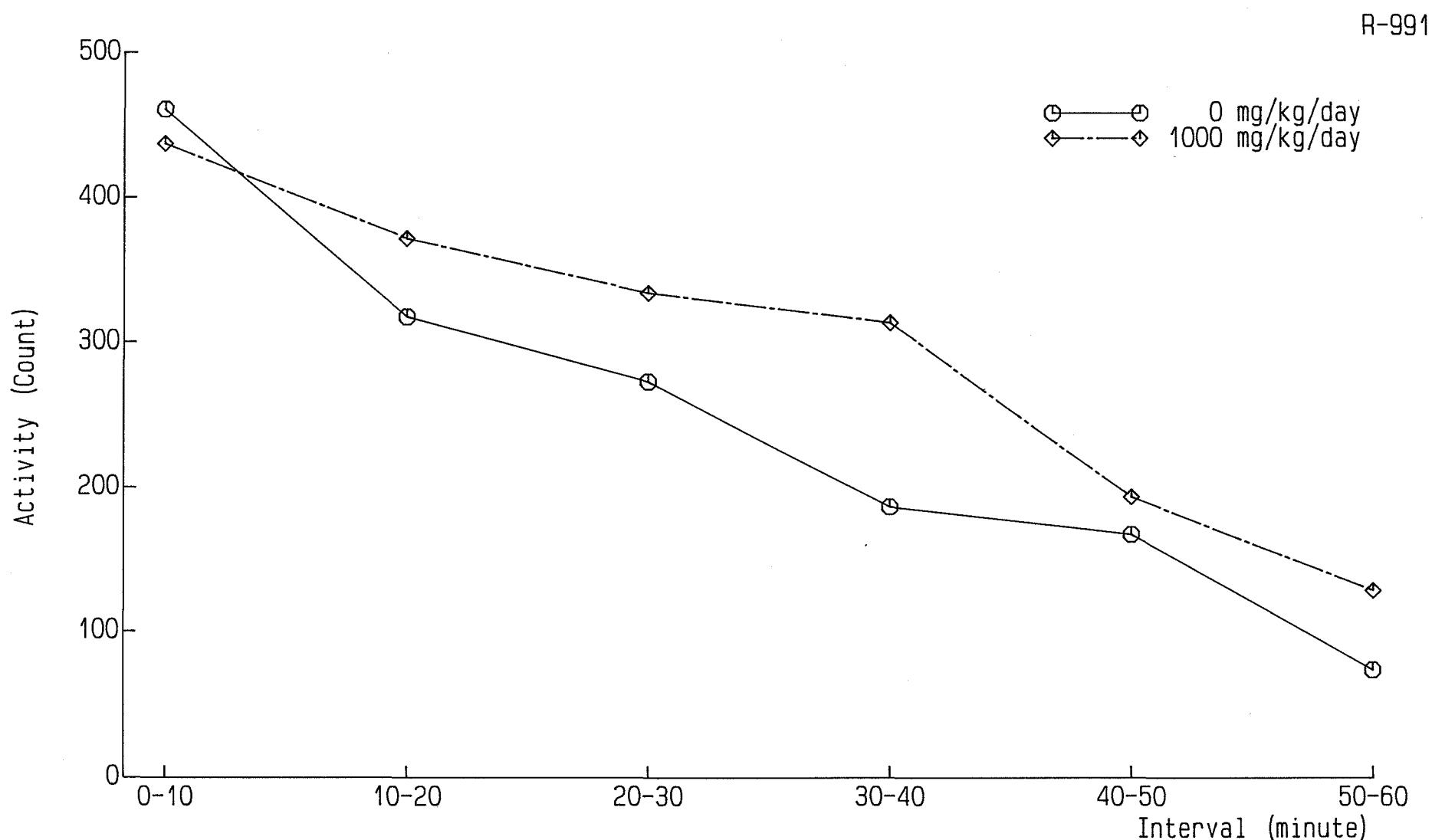


Fig.3 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane
Motor activity of female rats (Recovery group, Week 6 of administration)

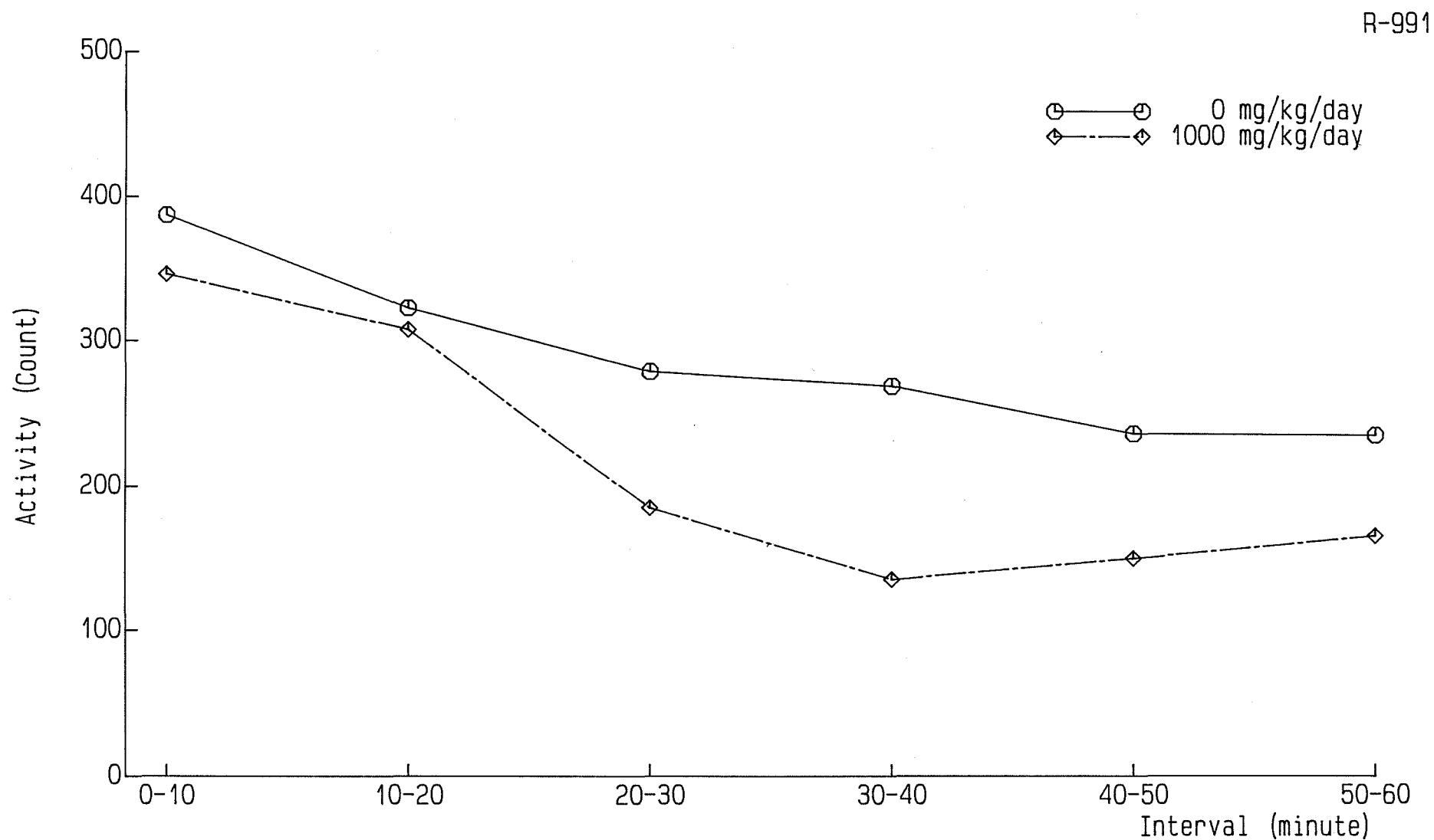


Fig.4 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane
Motor activity of male rats (Week 2 of recovery)

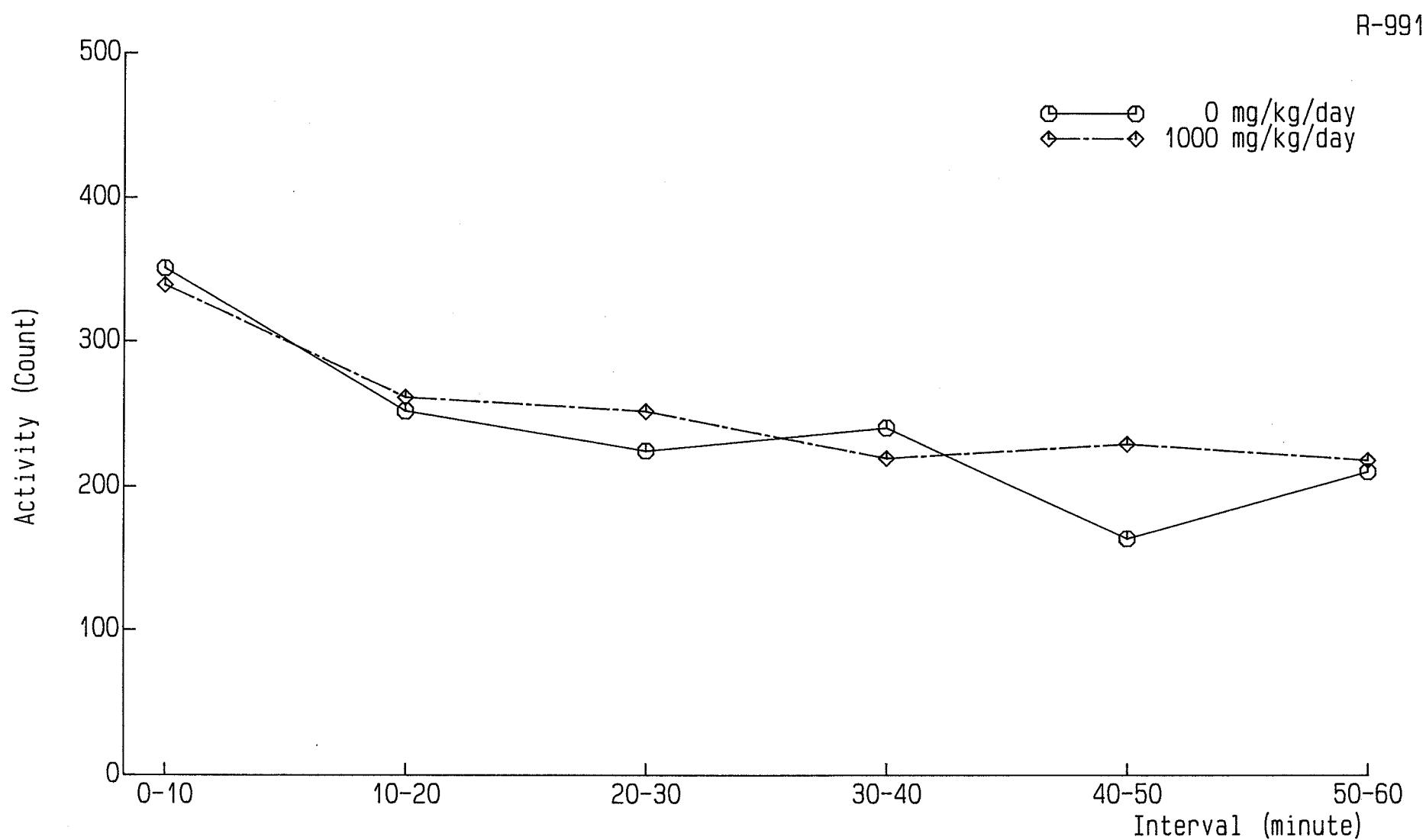


Fig.5 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane
Motor activity of female rats (Week 2 of recovery)

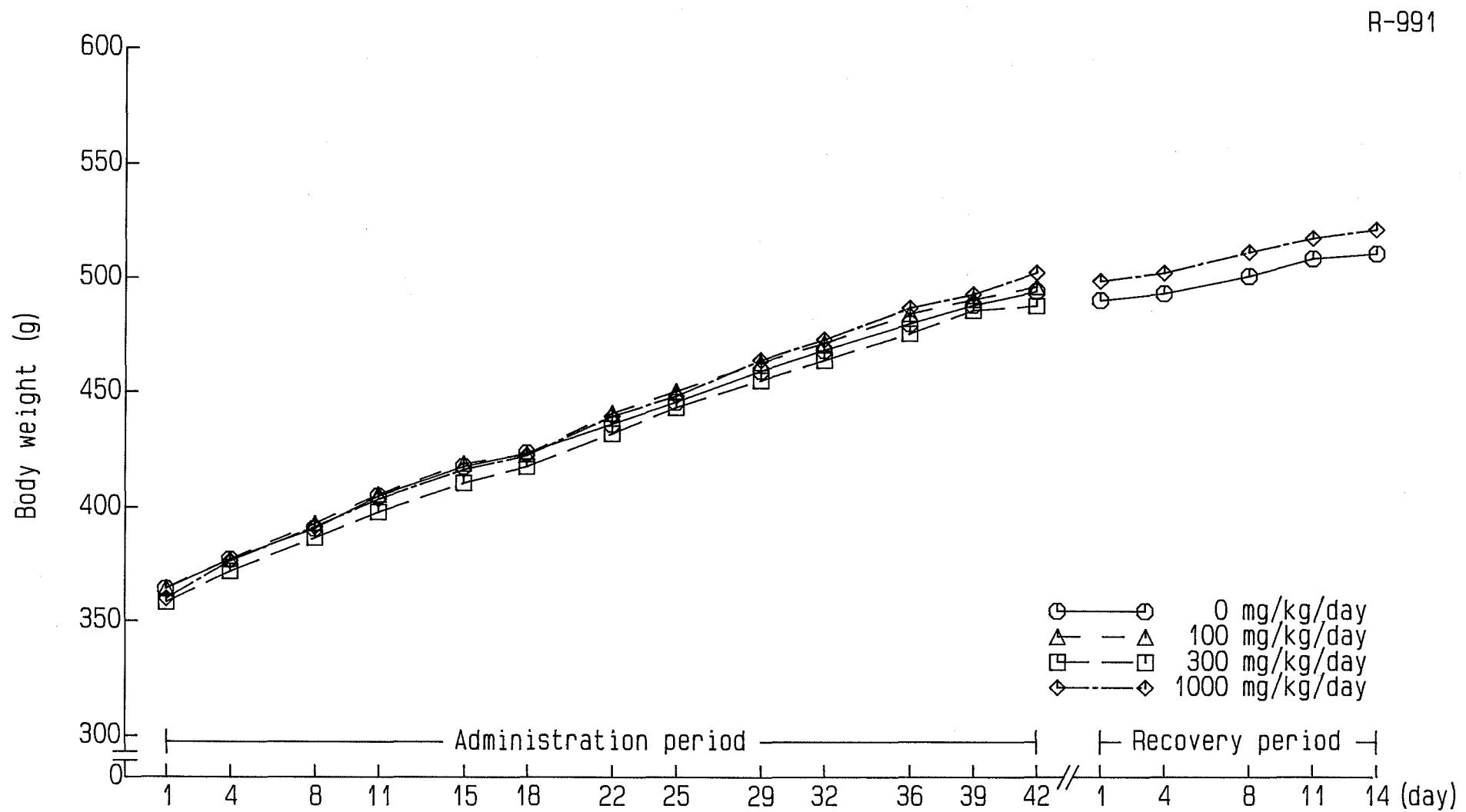


Fig.6 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane
Body weight changes of male rats

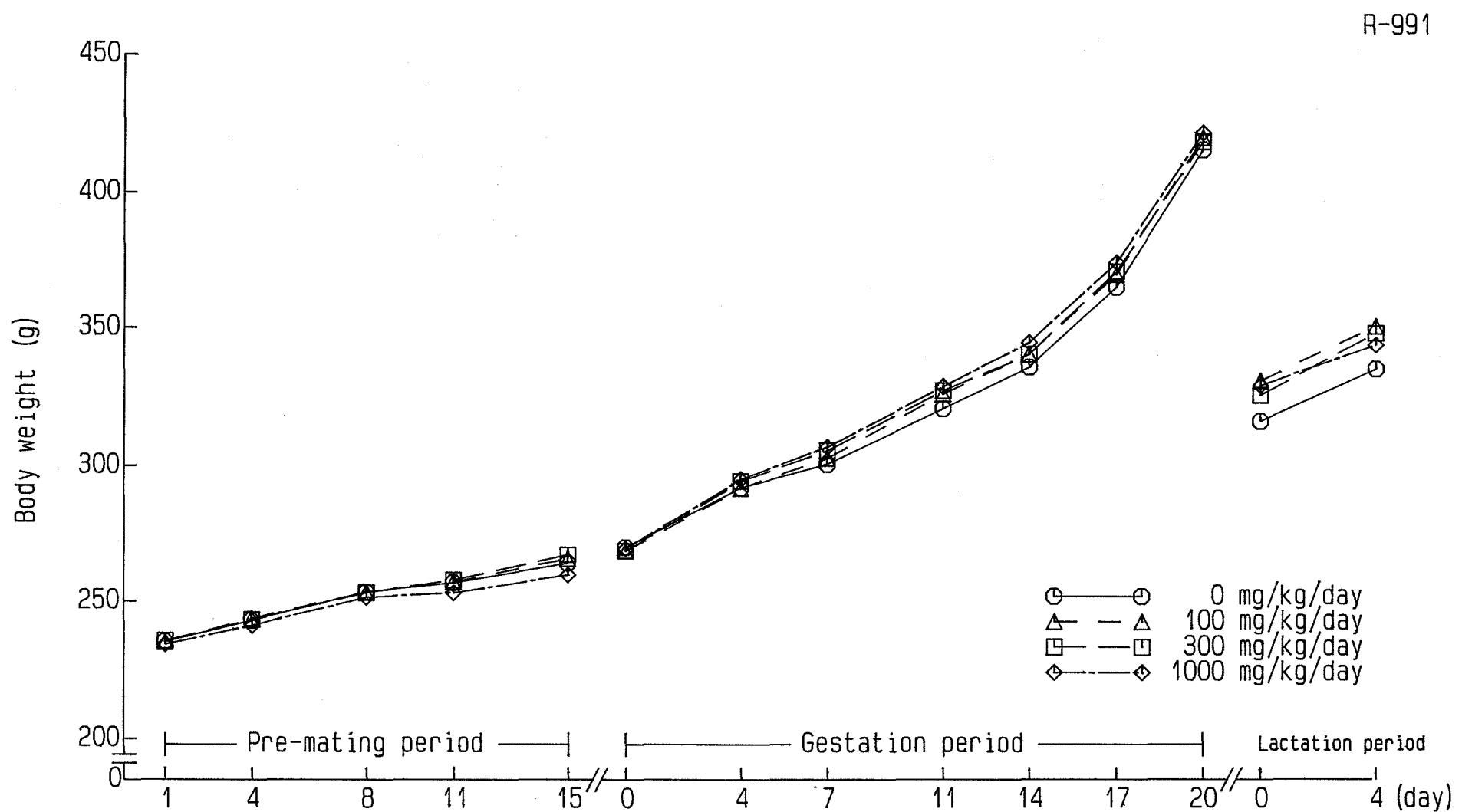


Fig.7 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane
Body weight changes of female rats (Main group)

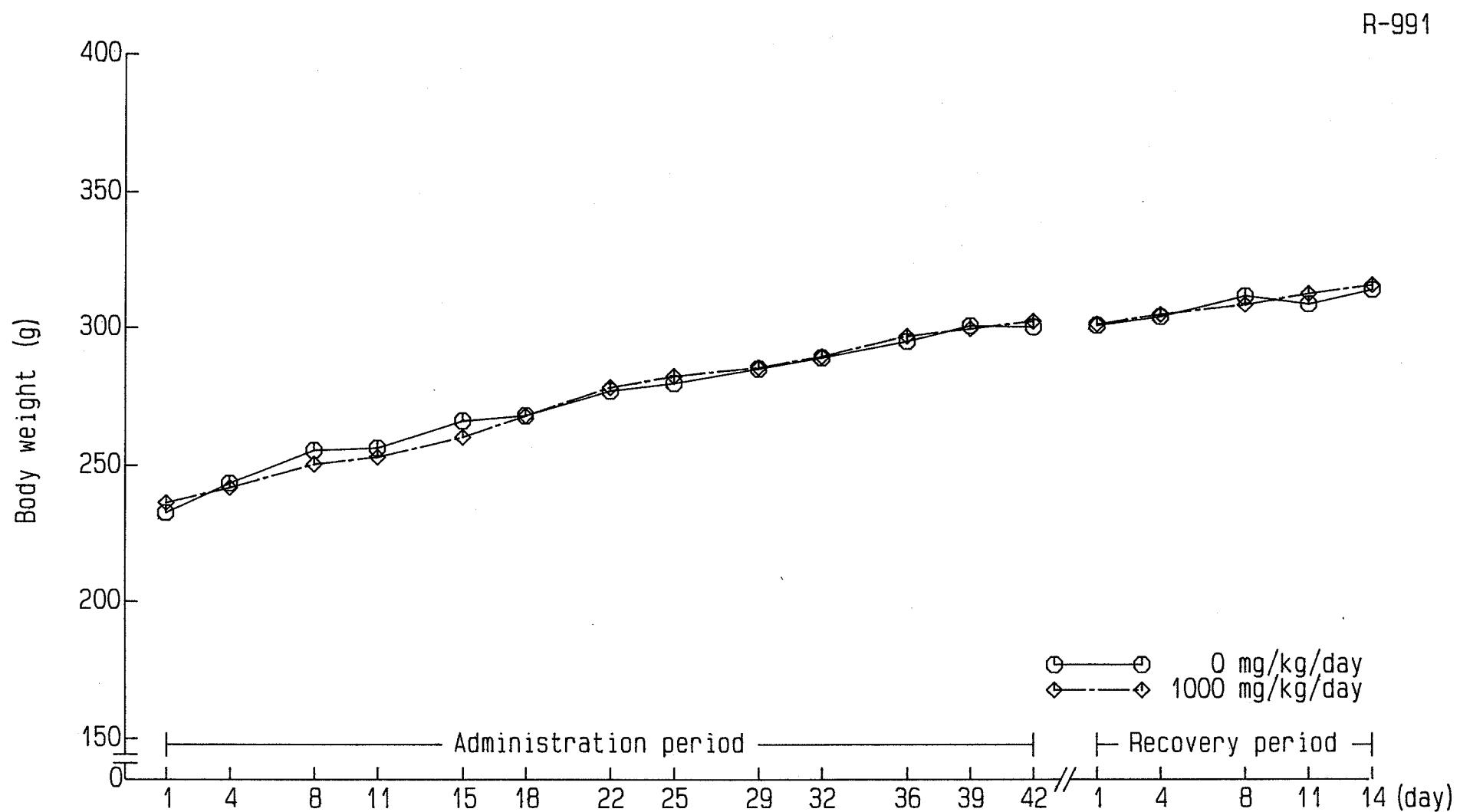


Fig.8 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane
Body weight changes of female rats (Recovery group)

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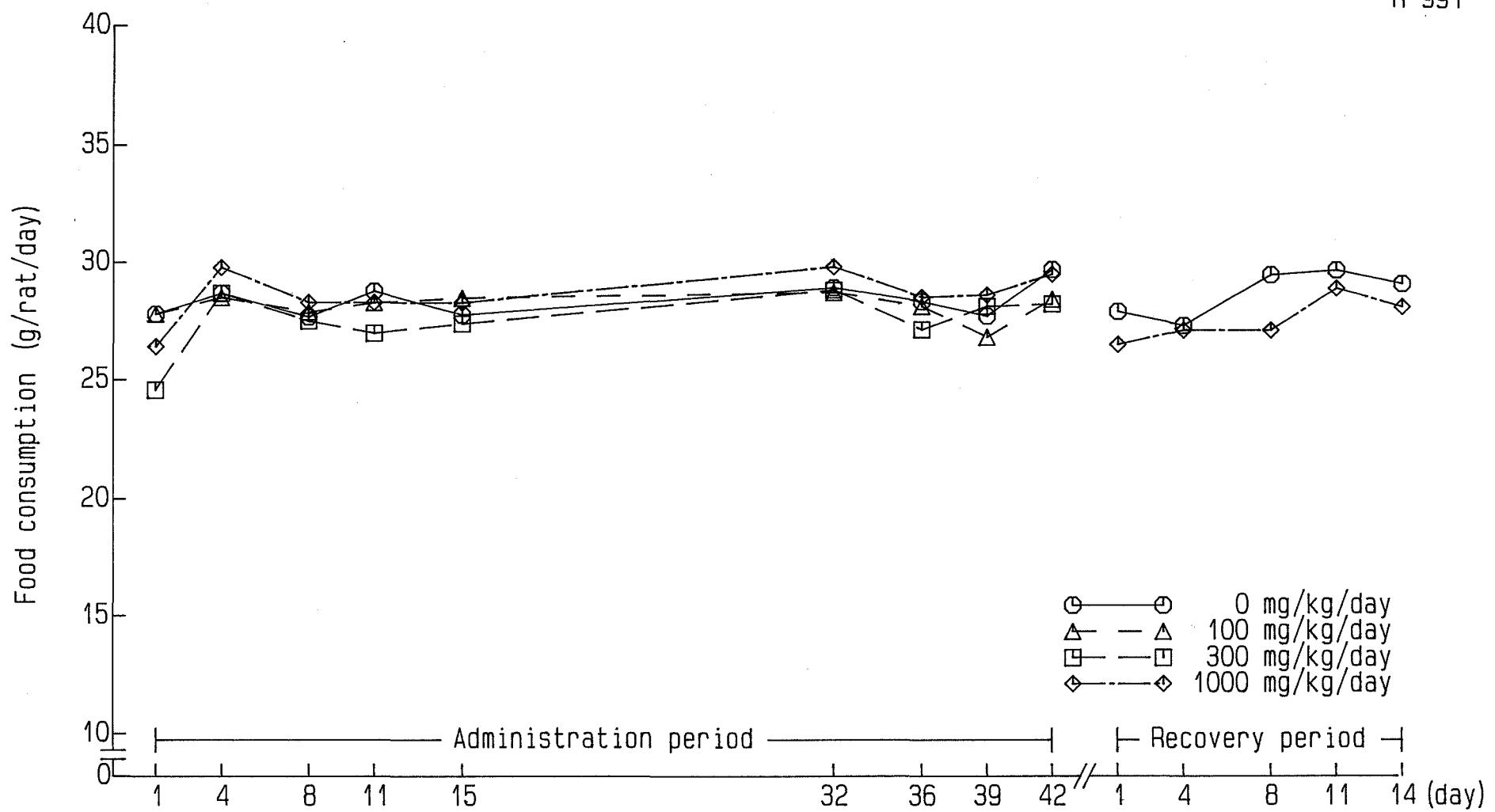


Fig.9 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane
Food consumption of male rats

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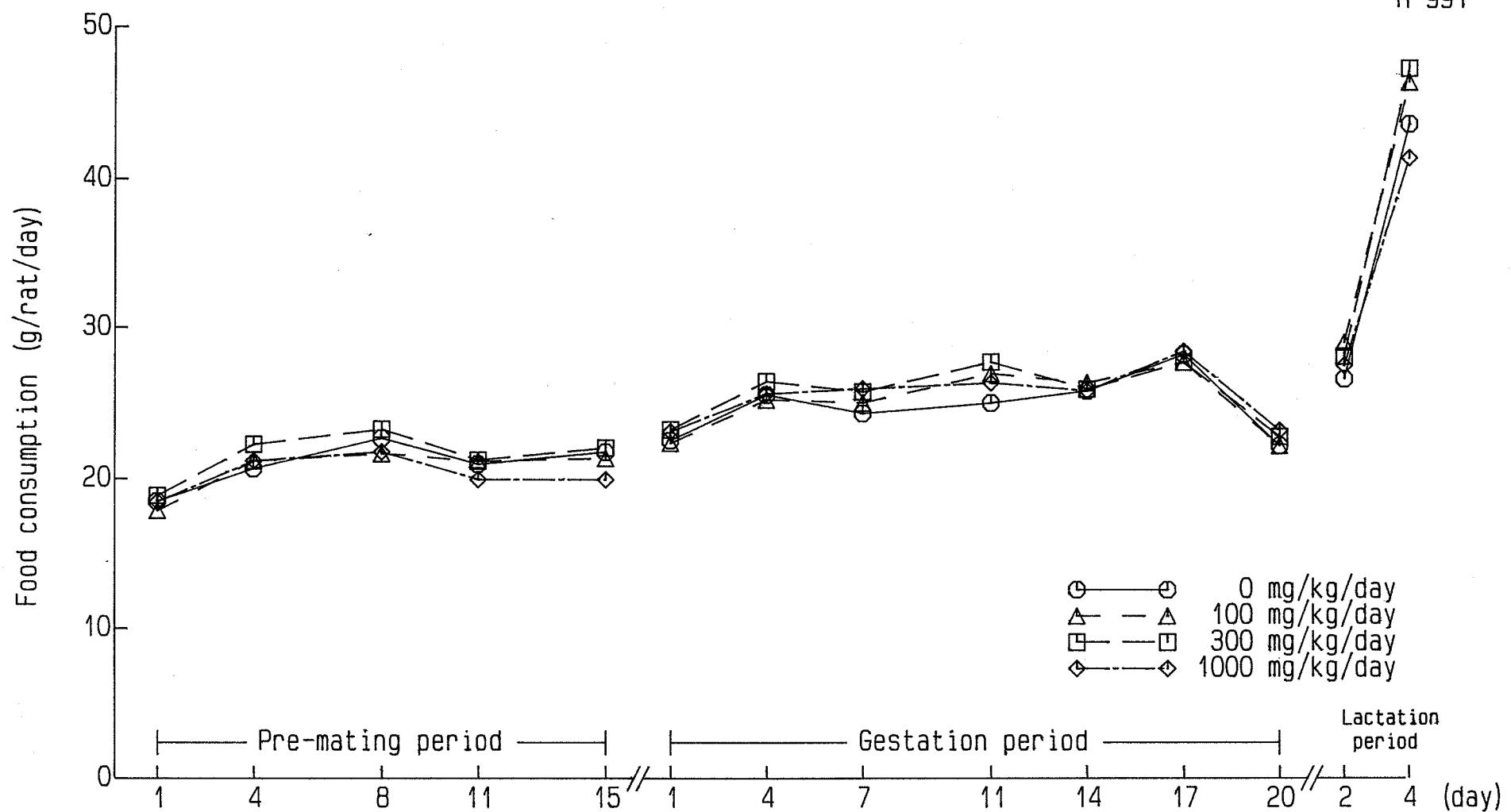


Fig.10 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane
Food consumption of female rats (Main group)

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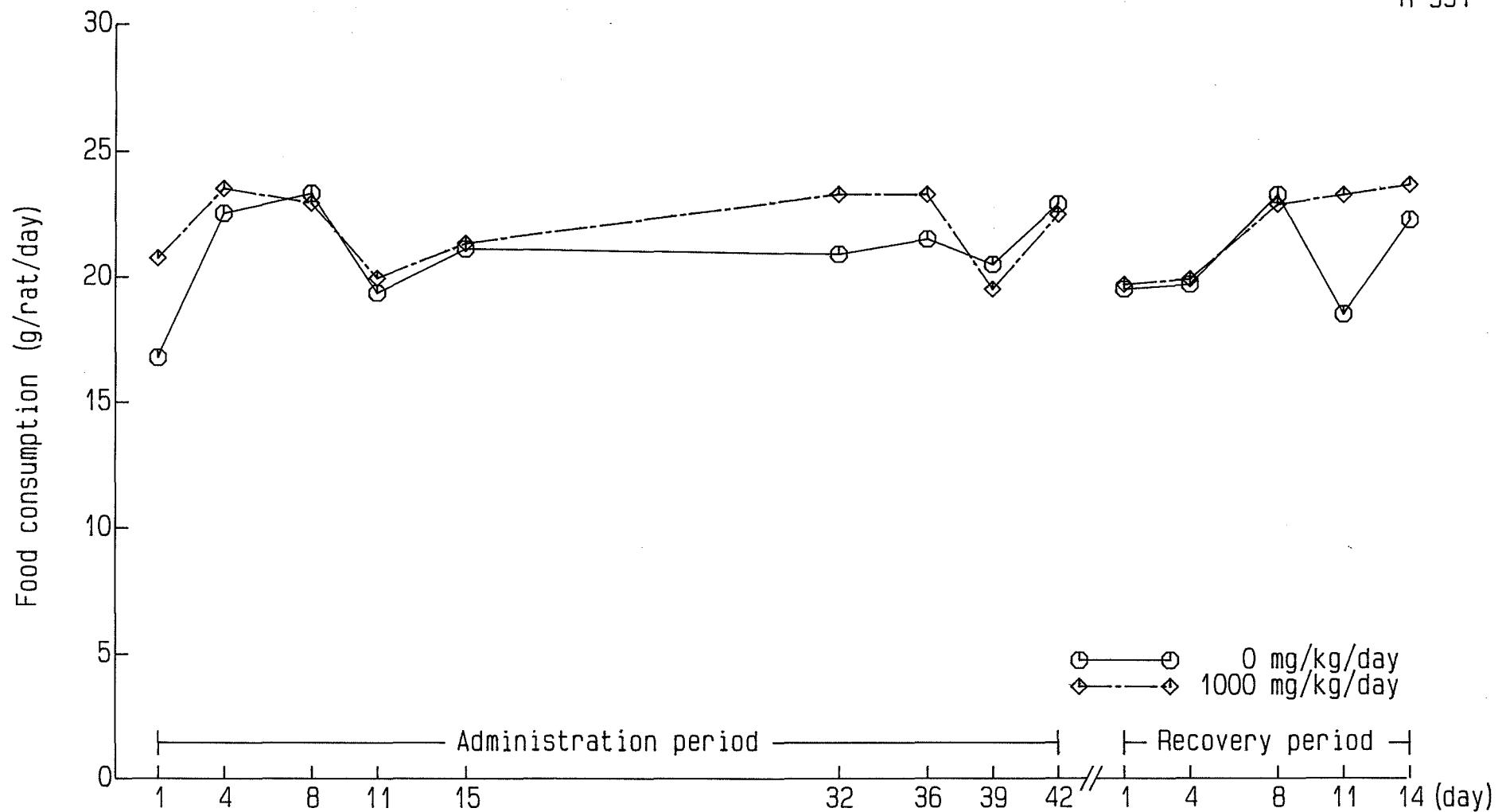


Fig.11 A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane
Food consumption of female rats (Recovery group)

Table 1-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Clinical signs in male rats (Administration period)

Dose mg/kg/day	Signs	Day of administration					
		1-7	8-14	15-21	22-28	29-35	36-42
0	No. of animals	12	12	12	12	12	12
	No. of animals with abnormal findings	0	0	0	0	0	0
100	No. of animals	12	12	12	12	12	12
	No. of animals with abnormal findings	0	0	0	0	0	0
300	No. of animals	12	12	12	12	12	12
	No. of animals with abnormal findings	0	0	0	0	0	0
1000	No. of animals	12	12	12	12	12	12
	No. of animals with abnormal findings	0	0	0	0	0	0

Table 1-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Clinical signs in female rats during the pre-mating period (Main group)

Table 1-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Clinical signs in dams during the gestation period (Main group)

Dose mg/kg/day	Signs	Administration																								
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23a)	
0	No. of dams	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	0	
	No. of dams with abnormal findings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
100	No. of dams	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	10	0	
	No. of dams with abnormal findings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
300	No. of dams	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11	0	
	No. of dams with abnormal findings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1000	No. of dams	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	9	1	0
	No. of dams with abnormal findings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

a): Day of gestation

Table 1-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Clinical signs in dams during the lactation period (Main group)

Dose mg/kg/day	Signs	Administration				
		0	1	2	3	4a)
0	No. of dams	12	12	12	12	12
	No. of dams with abnormal findings	0	0	0	0	0
100	No. of dams	12	12	12	12	12
	No. of dams with abnormal findings	0	0	0	0	0
300	No. of dams	12	12	12	12	12
	No. of dams with abnormal findings	0	0	0	0	0
1000	No. of dams	12	12	12	12	12
	No. of dams with abnormal findings	0	0	0	0	0

a): Day of lactation

Table 1-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Clinical signs in female rats (Recovery group, administration period)

Dose mg/kg/day	Signs	Day of administration					
		1-7	8-14	15-21	22-28	29-35	36-42
0	No. of animals	5	5	5	5	5	5
	No. of animals with abnormal findings	0	0	0	0	0	0
1000	No. of animals	5	5	5	5	5	5
	No. of animals with abnormal findings	0	0	0	0	0	0

Table 1-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Clinical signs in male rats (Recovery period)

Table 1-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Clinical signs in female rats (Recovery period)

Table 2-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: home cage observations (Week 1 of administration)

	Dose (mg/kg/day)	0	100	300	1000
Parameter	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: home cage observations (Week 2 of administration)

	Dose (mg/kg/day)	0	100	300	1000
Parameter	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: home cage observations (Week 3 of administration)

	Dose (mg/kg/day)	0	100	300	1000
Parameter	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: home cage observations (Week 4 of administration)

	Dose (mg/kg/day)	0	100	300	1000
Parameter	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Detailed clinical signs in male rats: home cage observations (Week 5 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
	No. of animals	12	12	12	12
Posture Normal		12	12	12	12
Convulsion None		12	12	12	12
Abnormal behavior None		12	12	12	12

Table 2-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: home cage observations (Week 6 of administration)

	Dose (mg/kg/day)	0	100	300	1000
Parameter	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Detailed clinical signs in female rats: home cage observations (Main group, Week 1 of administration)

Parameter	No. of animals	Dose (mg/kg/day)			
		0	100	300	1000
Posture Normal	12	12	12	12	12
Convulsion None	12	12	12	12	12
Abnormal behavior None	12	12	12	12	12

Table 2-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in female rats: home cage observations (Main group, Week 2 of administration)

	Dose (mg/kg/day)	0	100	300	1000
Parameter	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-9

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in female rats: home cage observations (Main group, Day 1 of gestation)

	Dose (mg/kg/day)	0	100	300	1000
Parameter	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-10

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Main group, Day 7 of gestation)

Parameter	Dose (mg/kg/day)	0	100	300	1000
	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-11

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Main group, Day 14 of gestation)

	Dose (mg/kg/day)	0	100	300	1000
Parameter	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-12

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Main group, Day 20 of gestation)

	Dose (mg/kg/day)	0	100	300	1000
Parameter	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-13

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Main group, Day 4 of lactation)

	Dose (mg/kg/day)	0	100	300	1000
Parameter	No. of animals	12	12	12	12
Posture					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12

Table 2-14

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Recovery group, Week 1 of administration)

Parameter	Dose (mg/kg/day)	0	1000
		No. of animals	No. of animals
Posture			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5

Table 2-15

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Recovery group, Week 2 of administration)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Posture			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5

Table 2-16

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Recovery group, Week 3 of administration)

Parameter	Dose (mg/kg/day)	0	1000
		No. of animals	No. of animals
Posture			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5

Table 2-17

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Recovery group, Week 4 of administration)

Parameter	No. of animals	Dose (mg/kg/day)	
		0	1000
Posture			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5

Table 2-18

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Recovery group, Week 5 of administration)

Parameter	Dose (mg/kg/day)	0	1000
	No. of animals	5	5
Posture			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5

Table 2-19

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Recovery group, Week 6 of administration)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Posture			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5

Table 2-20

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: home cage observations (Week 1 of recovery)

Parameter	Dose (mg/kg/day)	0	1000
	No. of animals	5	5
Posture			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5

Table 2-21

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Detailed clinical signs in male rats: home cage observations (Week 2 of recovery)

Parameter	Dose (mg/kg/day)	0	1000
	No. of animals	5	5
Posture			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5

Table 2-22

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Week 1 of recovery)

Dose (mg/kg/day)		0	1000
Parameter	No. of animals	5	5
Posture			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5

Table 2-23

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: home cage observations (Week 2 of recovery)

Dose (mg/kg/day)		0	1000
Parameter	No. of animals	5	5
Posture			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5

Table 2-24

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in male rats: in-the-hand observations (Week 1 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Ease of removal from cage					
Easy	11	12	12	12	
Some resistance/avoidance	1	0	0	0	
Fur condition					
Normal	12	12	12	12	
Skin					
Normal	12	12	12	12	
Secretions-Eye, Nose					
Absent	12	12	12	12	
Exophthalmos					
Absent	12	12	12	12	
Palpebral closure					
Normal	12	12	12	12	
Mucosal membranes					
Normal	12	12	12	12	
Lacrimation					
Normal	12	12	12	12	
Piloerection					
Absent	12	12	12	12	
Pupil size					
Normal	12	12	12	12	
Salivation					
None	12	12	12	12	
Abnormal respiration					
Absent	12	12	12	12	
Vocalization					
None	10	11	9	9	
Soft	2	1	3	3	
Reactivity to handling					
Easy	12	12	11	12	
Slightly awkward	0	0	1	0	

Table 2-25

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: in-the-hand observations (Week 2 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
	No. of animals	12	12	12	12
Ease of removal from cage					
Easy	10	12	12	12	12
Some resistance/avoidance	2	0	0	0	0
Fur condition					
Normal	12	12	12	12	12
Skin					
Normal	12	12	12	12	12
Secretions-Eye, Nose					
Absent	12	12	12	12	12
Exophthalmos					
Absent	12	12	12	12	12
Palpebral closure					
Normal	12	12	12	12	12
Mucosal membranes					
Normal	12	12	12	12	12
Lacration					
Normal	12	12	12	12	12
Piloerection					
Absent	12	12	12	12	12
Pupil size					
Normal	12	12	12	12	12
Salivation					
None	12	12	12	12	12
Abnormal respiration					
Absent	12	12	12	12	12
Vocalization					
None	9	10	10	10	10
Soft	3	2	2	2	2
Reactivity to handling					
Easy	11	12	11	12	12
Slightly awkward	1	0	1	0	0

Table 2-26

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: in-the-hand observations (Week 3 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Ease of removal from cage					
Easy	11	12	10	12	
Some resistance/avoidance	1	0	2	0	
Fur condition					
Normal	12	12	12	12	
Skin					
Normal	12	12	12	12	
Secretions-Eye, Nose					
Absent	12	12	12	12	
Exophthalmos					
Absent	12	12	12	12	
Palpebral closure					
Normal	12	12	12	12	
Mucosal membranes					
Normal	12	12	12	12	
Lacrimation					
Normal	12	12	12	12	
Piloerection					
Absent	12	12	12	12	
Pupil size					
Normal	12	12	12	12	
Salivation					
None	12	12	12	12	
Abnormal respiration					
Absent	12	12	12	12	
Vocalization					
None	10	10	10	11	
Soft	2	2	2	1	
Reactivity to handling					
Easy	12	12	12	12	

Table 2-27

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: in-the-hand observations (Week 4 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
	No. of animals	12	12	12	12
Ease of removal from cage					
Easy	12	12	10	12	
Some resistance/avoidance	0	0	2	0	
Fur condition					
Normal	12	12	12	12	
Skin					
Normal	12	12	12	12	
Secretions-Eye, Nose					
Absent	12	12	12	12	
Exophthalmos					
Absent	12	12	12	12	
Palpebral closure					
Normal	12	12	12	12	
Mucosal membranes					
Normal	12	12	12	12	
Lacrimation					
Normal	12	12	12	12	
Piloerection					
Absent	12	12	12	12	
Pupil size					
Normal	12	12	12	12	
Salivation					
None	12	12	12	12	
Abnormal respiration					
Absent	12	12	12	12	
Vocalization					
None	11	11	11	11	
Soft	1	1	1	1	
Reactivity to handling					
Easy	12	11	11	12	
Slightly awkward	0	1	1	0	

Table 2-28

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Detailed clinical signs in male rats: in-the-hand observations (Week 5 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Ease of removal from cage					
Easy		12	12	12	12
Fur condition					
Normal		12	12	12	12
Skin					
Normal		12	12	12	12
Secretions-Eye, Nose					
Absent		12	12	12	12
Exophthalmos					
Absent		12	12	12	12
Palpebral closure					
Normal		12	12	12	12
Mucosal membranes					
Normal		12	12	12	12
Lacrimation					
Normal		12	12	12	12
Piloerection					
Absent		12	12	12	12
Pupil size					
Normal		12	12	12	12
Salivation					
None		12	12	12	12
Abnormal respiration					
Absent		12	12	12	12
Vocalization					
None		12	11	11	10
Soft		0	1	1	2
Reactivity to handling					
Easy		12	12	12	12

Table 2-29

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Detailed clinical signs in male rats: in-the-hand observations (Week 6 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
	No. of animals	12	12	12	12
Ease of removal from cage					
Easy	11	11	12	12	
Some resistance/avoidance	1	1	0	0	
Fur condition					
Normal	12	12	12	12	
Skin					
Normal	12	12	12	12	
Secretions-Eye, Nose					
Absent	12	12	12	12	
Exophthalmos					
Absent	12	12	12	12	
Palpebral closure					
Normal	12	12	12	12	
Mucosal membranes					
Normal	12	12	12	12	
Lacrimation					
Normal	12	12	12	12	
Piloerection					
Absent	12	12	12	12	
Pupil size					
Normal	12	12	12	12	
Salivation					
None	12	12	12	12	
Abnormal respiration					
Absent	12	12	12	12	
Vocalization					
None	12	12	12	10	
Soft	0	0	0	2	
Reactivity to handling					
Easy	12	12	12	12	

Table 2-30

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: in-the-hand observations (Main group, Week 1 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Ease of removal from cage					
Easy		12	12	12	12
Fur condition					
Normal		12	12	12	12
Skin					
Normal		12	12	12	12
Secretions-Eye, Nose					
Absent		12	12	12	12
Exophthalmos					
Absent		12	12	12	12
Palpebral closure					
Normal		12	12	12	12
Mucosal membranes					
Normal		12	12	12	12
Lacrimation					
Normal		12	12	12	12
Piloerection					
Absent		12	12	12	12
Pupil size					
Normal		12	12	12	12
Salivation					
None		12	12	12	12
Abnormal respiration					
Absent		12	12	12	12
Vocalization					
None		11	12	11	12
Soft		1	0	1	0
Reactivity to handling					
Easy		11	11	12	12
Slightly awkward		1	1	0	0

Table 2-31

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: in-the-hand observations (Main group, Week 2 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Ease of removal from cage					
Easy		12	12	12	12
Fur condition					
Normal		12	12	12	12
Skin					
Normal		12	12	12	12
Secretions-Eye, Nose					
Absent		12	12	12	12
Exophthalmos					
Absent		12	12	12	12
Palpebral closure					
Normal		12	12	12	12
Mucosal membranes					
Normal		12	12	12	12
Lacrimation					
Normal		12	12	12	12
Piloerection					
Absent		12	12	12	12
Pupil size					
Normal		12	12	12	12
Salivation					
None		12	12	12	12
Abnormal respiration					
Absent		12	12	12	12
Vocalization					
None		11	12	10	10
Soft		1	0	2	2
Reactivity to handling					
Easy		12	12	12	12

Table 2-32

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Detailed clinical signs in female rats: in-the-hand observations (Main group, Day 1 of gestation)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Ease of removal from cage					
Easy	12	12	12	12	12
Fur condition					
Normal	12	12	12	12	12
Skin					
Normal	12	12	12	12	12
Secretions-Eye, Nose					
Absent	12	12	12	12	12
Exophthalmos					
Absent	12	12	12	12	12
Palpebral closure					
Normal	12	12	12	12	12
Mucosal membranes					
Normal	12	12	12	12	12
Lacrimation					
Normal	12	12	12	12	12
Piloerection					
Absent	12	12	12	12	12
Pupil size					
Normal	12	12	12	12	12
Salivation					
None	12	12	12	12	12
Abnormal respiration					
Absent	12	12	12	12	12
Vocalization					
None	11	12	12	12	12
Soft	1	0	0	0	0
Reactivity to handling					
Easy	12	12	12	12	12

Table 2-33

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: in-the-hand observations (Main group, Day 7 of gestation)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Ease of removal from cage					
Easy		12	12	12	12
Fur condition					
Normal		12	12	12	12
Skin					
Normal		12	12	12	12
Secretions-Eye, Nose					
Absent		12	12	12	12
Exophthalmos					
Absent		12	12	12	12
Palpebral closure					
Normal		12	12	12	12
Mucosal membranes					
Normal		12	12	12	12
Lacrimation					
Normal		12	12	12	12
Piloerection					
Absent		12	12	12	12
Pupil size					
Normal		12	12	12	12
Salivation					
None		12	12	12	12
Abnormal respiration					
Absent		12	12	12	12
Vocalization					
None		12	12	12	11
Soft		0	0	0	1
Reactivity to handling					
Easy		12	12	12	12

Table 2-34

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: in-the-hand observations (Main group, Day 14 of gestation)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Ease of removal from cage					
Easy	12	12	12	12	12
Fur condition					
Normal	12	12	12	12	12
Skin					
Normal	12	12	12	12	12
Secretions-Eye, Nose					
Absent	12	12	12	12	12
Exophthalmos					
Absent	12	12	12	12	12
Palpebral closure					
Normal	12	12	12	12	12
Mucosal membranes					
Normal	12	12	12	12	12
Lacrimation					
Normal	12	12	12	12	12
Piloerection					
Absent	12	12	12	12	12
Pupil size					
Normal	12	12	12	12	12
Salivation					
None	12	12	12	12	12
Abnormal respiration					
Absent	12	12	12	12	12
Vocalization					
None	12	12	12	12	12
Reactivity to handling					
Easy	12	12	12	12	12

Table 2-35

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Detailed clinical signs in female rats: in-the-hand observations (Main group, Day 20 of gestation)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Ease of removal from cage					
Easy	12	12	12	12	12
Fur condition					
Normal	12	12	12	12	12
Skin					
Normal	12	12	12	12	12
Secretions-Eye, Nose					
Absent	12	12	12	12	12
Exophthalmos					
Absent	12	12	12	12	12
Palpebral closure					
Normal	12	12	12	12	12
Mucosal membranes					
Normal	12	12	12	12	12
Lacrimation					
Normal	12	12	12	12	12
Piloerection					
Absent	12	12	12	12	12
Pupil size					
Normal	12	12	12	12	12
Salivation					
None	12	12	12	12	12
Abnormal respiration					
Absent	12	12	12	12	12
Vocalization					
None	12	12	12	12	12
Reactivity to handling					
Easy	12	12	12	12	12

Table 2-36

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in female rats: in-the-hand observations (Main group, Day 4 of lactation)

Parameter	Dose (mg/kg/day)	0	100	300	1000
	No. of animals	12	12	12	12
Ease of removal from cage					
Easy	12	12	12	11	
Some resistance/avoidance	0	0	0	1	
Fur condition					
Normal	12	12	12	12	
Skin					
Normal	12	12	12	12	
Secretions-Eye, Nose					
Absent	12	12	12	12	
Exophthalmos					
Absent	12	12	12	12	
Palpebral closure					
Normal	12	12	12	12	
Mucosal membranes					
Normal	12	12	12	12	
Lacrimation					
Normal	12	12	12	12	
Piloerection					
Absent	12	12	12	12	
Pupil size					
Normal	12	12	12	12	
Salivation					
None	12	12	12	12	
Abnormal respiration					
Absent	12	12	12	12	
Vocalization					
None	12	12	12	12	
Reactivity to handling					
Easy	12	12	12	11	
Slightly awkward	0	0	0	1	

Table 2-37

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: in-the-hand observations (Recovery group, Week 1 of administration)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Ease of removal from cage			
Easy		5	5
Fur condition			
Normal		5	5
Skin			
Normal		5	5
Secretions-Eye, Nose			
Absent		5	5
Exophthalmos			
Absent		5	5
Palpebral closure			
Normal		5	5
Mucosal membranes			
Normal		5	5
Lacrimation			
Normal		5	5
Piloerection			
Absent		5	5
Pupil size			
Normal		5	5
Salivation			
None		5	5
Abnormal respiration			
Absent		5	5
Vocalization			
None		5	5
Reactivity to handling			
Easy		5	5

Table 2-38

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: in-the-hand observations (Recovery group, Week 2 of administration)

Parameter	No. of animals	Dose (mg/kg/day)	0	1000
			5	5
Ease of removal from cage				
Easy		5	5	
Fur condition				
Normal		5	5	
Skin				
Normal		5	5	
Secretions-Eye, Nose				
Absent		5	5	
Exophthalmos				
Absent		5	5	
Palpebral closure				
Normal		5	5	
Mucosal membranes				
Normal		5	5	
Lacrimation				
Normal		5	5	
Piloerection				
Absent		5	5	
Pupil size				
Normal		5	5	
Salivation				
None		5	5	
Abnormal respiration				
Absent		5	5	
Vocalization				
None		5	4	
Soft		0	1	
Reactivity to handling				
Easy		5	5	

Table 2-39

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Detailed clinical signs in female rats: in-the-hand observations (Recovery group, Week 3 of administration)

Parameter	No. of animals	Dose (mg/kg/day)	0	1000
			5	5
Ease of removal from cage				
Easy		5	5	
Fur condition				
Normal		5	5	
Skin				
Normal		5	5	
Secretions-Eye, Nose				
Absent		5	5	
Exophthalmos				
Absent		5	5	
Palpebral closure				
Normal		5	5	
Mucosal membranes				
Normal		5	5	
Lacrimation				
Normal		5	5	
Piloerection				
Absent		5	5	
Pupil size				
Normal		5	5	
Salivation				
None		5	5	
Abnormal respiration				
Absent		5	5	
Vocalization				
None		5	5	
Reactivity to handling				
Easy		5	5	

Table 2-40

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: in-the-hand observations (Recovery group, Week 4 of administration)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Ease of removal from cage			
Easy		5	5
Fur condition			
Normal		5	5
Skin			
Normal		5	5
Secretions-Eye, Nose			
Absent		5	5
Exophthalmos			
Absent		5	5
Palpebral closure			
Normal		5	5
Mucosal membranes			
Normal		5	5
Lacrimation			
Normal		5	5
Piloerection			
Absent		5	5
Pupil size			
Normal		5	5
Salivation			
None		5	5
Abnormal respiration			
Absent		5	5
Vocalization			
None		5	5
Reactivity to handling			
Easy		5	5

Table 2-41

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in female rats: in-the-hand observations (Recovery group, Week 5 of administration)

Parameter	No. of animals	Dose (mg/kg/day)	0	1000
			5	5
Ease of removal from cage				
Easy		5	5	
Fur condition				
Normal		5	5	
Skin				
Normal		5	5	
Secretions-Eye, Nose				
Absent		5	5	
Exophthalmos				
Absent		5	5	
Palpebral closure				
Normal		5	5	
Mucosal membranes				
Normal		5	5	
Lacrimation				
Normal		5	5	
Piloerection				
Absent		5	5	
Pupil size				
Normal		5	5	
Salivation				
None		5	5	
Abnormal respiration				
Absent		5	5	
Vocalization				
None		5	4	
Soft		0	1	
Reactivity to handling				
Easy		5	5	

Table 2-42

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in female rats: in-the-hand observations (Recovery group, Week 6 of administration)

Parameter	No. of animals	Dose (mg/kg/day)	0	1000
			5	5
Ease of removal from cage				
Easy		5	5	
Fur condition				
Normal		5	5	
Skin				
Normal		5	5	
Secretions-Eye, Nose				
Absent		5	5	
Exophthalmos				
Absent		5	5	
Palpebral closure				
Normal		5	5	
Mucosal membranes				
Normal		5	5	
Lacrimation				
Normal		5	5	
Piloerection				
Absent		5	5	
Pupil size				
Normal		5	5	
Salivation				
None		5	5	
Abnormal respiration				
Absent		5	5	
Vocalization				
None		5	3	
Soft		0	2	
Reactivity to handling				
Easy		5	5	

Table 2-43

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: in-the-hand observations (Week 1 of recovery)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Ease of removal from cage			
Easy		5	5
Fur condition			
Normal		5	5
Skin			
Normal		5	5
Secretions-Eye, Nose			
Absent		5	5
Exophthalmos			
Absent		5	5
Palpebral closure			
Normal		5	5
Mucosal membranes			
Normal		5	5
Lacrimation			
Normal		5	5
Piloerection			
Absent		5	5
Pupil size			
Normal		5	5
Salivation			
None		5	5
Abnormal respiration			
Absent		5	5
Vocalization			
None		5	5
Reactivity to handling			
Easy		5	5

Table 2-44

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in male rats: in-the-hand observations (Week 2 of recovery)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Ease of removal from cage			
Easy	4	5	
Some resistance/avoidance	1	0	
Fur condition			
Normal	5	5	
Skin			
Normal	5	5	
Secretions-Eye, Nose			
Absent	5	5	
Exophthalmos			
Absent	5	5	
Palpebral closure			
Normal	5	5	
Mucosal membranes			
Normal	5	5	
Lacration			
Normal	5	5	
Piloerection			
Absent	5	5	
Pupil size			
Normal	5	5	
Salivation			
None	5	5	
Abnormal respiration			
Absent	5	5	
Vocalization			
None	4	5	
Soft	1	0	
Reactivity to handling			
Easy	5	5	

Table 2-45

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Detailed clinical signs in female rats: in-the-hand observations (Week 1 of recovery)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Ease of removal from cage			
Easy		5	5
Fur condition			
Normal		5	5
Skin			
Normal		5	5
Secretions-Eye, Nose			
Absent		5	5
Exophthalmos			
Absent		5	5
Palpebral closure			
Normal		5	5
Mucosal membranes			
Normal		5	5
Lacrimation			
Normal		5	5
Piloerection			
Absent		5	5
Pupil size			
Normal		5	5
Salivation			
None		5	5
Abnormal respiration			
Absent		5	5
Vocalization			
None		5	5
Reactivity to handling			
Easy		5	5

Table 2-46

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: in-the-hand observations (Week 2 of recovery)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Ease of removal from cage			
Easy	5	5	
Fur condition			
Normal	5	5	
Skin			
Normal	5	5	
Secretions-Eye, Nose			
Absent	5	5	
Exophthalmos			
Absent	5	5	
Palpebral closure			
Normal	5	5	
Mucosal membranes			
Normal	5	5	
Lacrimation			
Normal	5	5	
Piloerection			
Absent	5	5	
Pupil size			
Normal	5	5	
Salivation			
None	5	5	
Abnormal respiration			
Absent	5	5	
Vocalization			
None	5	4	
Soft	0	1	
Reactivity to handling			
Easy	5	5	

Table 2-47

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: open field observation (Week 1 of administration)

Parameter	No. of animals	Dose (mg/kg/day)			
		0	100	300	1000
Arousal					
Normal	12	12	12	12	12
Convulsion					
None	12	12	12	12	12
Abnormal behavior					
None	12	12	12	12	12
Stereotypy					
None	12	12	12	12	12
Gait					
Normal	12	12	12	12	12
Posture					
Normal	12	12	12	12	12
Grooming					
None	12	12	12	12	12
Rearing (Mean \pm S.D.)	4 \pm 1	4 \pm 2	5 \pm 2	6 \pm 2*D	
Defecation count (Mean \pm S.D.)	0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0	
Urination					
None	10	10	11	11	
Small amount	1	2	1	1	
Moderate amount	1	0	0	0	

* : p<0.05 (Significant difference from control group)

D : Dunnett's test

Table 2-48

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in male rats: open field observation (Week 2 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Arousal					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12
Stereotypy					
None		12	12	12	12
Gait					
Normal		12	12	12	12
Posture					
Normal		12	12	12	12
Grooming					
None		12	12	12	12
Rearing (Mean \pm S.D.)		4 \pm 2	4 \pm 2	6 \pm 2	4 \pm 1
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0
Urination					
None		9	8	10	9
Small amount		3	4	2	3

No significant difference in any treated groups from control group.

Table 2-49

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: open field observation (Week 3 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Arousal					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12
Stereotypy					
None		12	12	12	12
Gait					
Normal		12	12	12	12
Posture					
Normal		12	12	12	12
Grooming					
None		12	12	12	12
Rearing (Mean \pm S.D.)		4 \pm 2	4 \pm 2	5 \pm 2	4 \pm 2
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0
Urination					
None		8	11	11	9
Small amount		4	1	1	3

No significant difference in any treated groups from control group.

Table 2-50

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Detailed clinical signs in male rats: open field observation (Week 4 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Arousal					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12
Stereotypy					
None		12	12	12	12
Gait					
Normal		12	12	12	12
Posture					
Normal		12	12	12	12
Grooming					
None		12	12	12	12
Rearing (Mean \pm S.D.)		5 \pm 1	4 \pm 2	5 \pm 2	6 \pm 1
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0
Urination					
None		7	8	11	9
Small amount		5	4	1	3

No significant difference in any treated groups from control group.

Table 2-51

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in male rats: open field observation (Week 5 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Arousal					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12
Stereotypy					
None		12	12	12	12
Gait					
Normal		12	12	12	12
Posture					
Normal		12	12	12	12
Grooming					
None		12	12	12	12
Rearing (Mean \pm S.D.)		5 \pm 1	5 \pm 2	5 \pm 3	6 \pm 2
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0
Urination					
None		8	10	11	9
Small amount		4	2	1	3

No significant difference in any treated groups from control group.

Table 2-52

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: open field observation (Week 6 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Arousal					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12
Stereotypy					
None		12	12	12	12
Gait					
Normal		12	12	12	12
Posture					
Normal		12	12	12	12
Grooming					
None		12	12	12	12
Rearing (Mean \pm S.D.)	5 \pm 2	5 \pm 2	5 \pm 3	6 \pm 2	
Defecation count (Mean \pm S.D.)	0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0	
Urination					
None	10	10	9	8	
Small amount	2	2	3	3	
Large/excessive amount	0	0	0	1	

No significant difference in any treated groups from control group.

Table 2-53

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: open field observation (Main group, Week 1 of administration)

Parameter	No. of animals	Dose (mg/kg/day)			
		0	100	300	1000
Arousal					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12
Stereotypy					
None		12	12	12	12
Gait					
Normal		12	12	12	12
Posture					
Normal		12	12	12	12
Grooming					
None		12	12	12	12
Rearing (Mean \pm S.D.)		7 \pm 2	8 \pm 3	8 \pm 2	8 \pm 2
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0
Urination					
None		12	12	12	12

No significant difference in any treated groups from control group.

Table 2-54

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in female rats: open field observation (Main group, Week 2 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Arousal					
Normal	11	12	12	12	12
Increased alertness	1	0	0	0	0
Convulsion					
None	12	12	12	12	12
Abnormal behavior					
None	12	12	12	12	12
Stereotypy					
None	12	12	12	12	12
Gait					
Normal	12	12	12	12	12
Posture					
Normal	12	12	12	12	12
Grooming					
None	12	12	12	12	12
Rearing (Mean \pm S.D.)	9 \pm 2	8 \pm 2	9 \pm 2	9 \pm 3	
Defecation count (Mean \pm S.D.)	0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0	
Urination					
None	11	12	11	12	
Small amount	1	0	1	0	

No significant difference in any treated groups from control group.

Table 2-55

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: open field observation (Main group, Day 1 of gestation)

Parameter	No. of animals	Dose (mg/kg/day)	0	100	300	1000
			12	12	12	12
Arousal						
Normal		12	12	12	12	12
Convulsion						
None		12	12	12	12	12
Abnormal behavior						
None		12	12	12	12	12
Stereotypy						
None		12	12	12	12	12
Gait						
Normal		12	12	12	12	12
Posture						
Normal		12	12	12	12	12
Grooming						
None		12	12	12	12	12
Rearing (Mean \pm S.D.)		7 \pm 2	9 \pm 2	8 \pm 2	8 \pm 2	
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0	
Urination						
None		12	12	12	12	

No significant difference in any treated groups from control group.

Table 2-56

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: open field observation (Main group, Day 7 of gestation)

Parameter	No. of animals	Dose (mg/kg/day)	0	100	300	1000
			12	12	12	12
Arousal						
Normal		12	12	12	12	12
Convulsion						
None		12	12	12	12	12
Abnormal behavior						
None		12	12	12	12	12
Stereotypy						
None		12	12	12	12	12
Gait						
Normal		12	12	12	12	12
Posture						
Normal		12	12	12	12	12
Grooming						
None		12	12	12	12	12
Rearing (Mean \pm S.D.)		8 \pm 2	8 \pm 2	8 \pm 2	8 \pm 2	
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0	
Urination						
None		12	12	12	12	12

No significant difference in any treated groups from control group.

Table 2-57

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: open field observation (Main group, Day 14 of gestation)

Parameter	No. of animals	Dose (mg/kg/day)	0	100	300	1000
			12	12	12	12
Arousal						
Normal		12	12	12	12	12
Convulsion						
None		12	12	12	12	12
Abnormal behavior						
None		12	12	12	12	12
Stereotypy						
None		12	12	12	12	12
Gait						
Normal		12	12	12	12	12
Posture						
Normal		12	12	12	12	12
Grooming						
None		12	12	12	12	12
Rearing (Mean \pm S.D.)		7 \pm 2	8 \pm 3	7 \pm 3	6 \pm 1	
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0	
Urination						
None		12	12	12	12	12

No significant difference in any treated groups from control group.

Table 2-58

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in female rats: open field observation (Main group, Day 20 of gestation)

Parameter	No. of animals	Dose (mg/kg/day)			
		0	100	300	1000
Arousal					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12
Stereotypy					
None		12	12	12	12
Gait					
Normal		12	12	12	12
Posture					
Normal		12	12	12	12
Grooming					
None		12	12	12	12
Rearing (Mean \pm S.D.)		6 \pm 1	7 \pm 2	7 \pm 2	7 \pm 2
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0
Urination					
None		12	12	12	12

No significant difference in any treated groups from control group.

Table 2-59

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Detailed clinical signs in female rats: open field observation (Main group, Day 4 of lactation)

Parameter	Dose (mg/kg/day)	0	100	300	1000
		12	12	12	12
Arousal					
Normal		12	12	12	12
Convulsion					
None		12	12	12	12
Abnormal behavior					
None		12	12	12	12
Stereotypy					
None		12	12	12	12
Gait					
Normal		12	12	12	12
Posture					
Normal		12	12	12	12
Grooming					
None		12	12	12	11
Occasional bouts (up to four)		0	0	0	1
Rearing (Mean \pm S.D.)		9 \pm 2	8 \pm 2	7 \pm 2	8 \pm 2
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0
Urination					
None		12	12	11	12
Small amount		0	0	1	0

No significant difference in any treated groups from control group.

Table 2-60

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: open field observation (Recovery group, Week 1 of administration)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Arousal			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5
Stereotypy			
None		5	5
Gait			
Normal		5	5
Posture			
Normal		5	5
Grooming			
None		5	5
Rearing (Mean \pm S.D.)	8 \pm 2	8 \pm 1	
Defecation count (Mean \pm S.D.)	0 \pm 0	0 \pm 0	
Urination			
None		5	5

No significant difference between treated group and control group.

Table 2-61

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: open field observation (Recovery group, Week 2 of administration)

Parameter	No. of animals	Dose (mg/kg/day)	0	1000
			5	5
Arousal				
Normal			5	5
Convulsion				
None			5	5
Abnormal behavior				
None			5	5
Stereotypy				
None			5	5
Gait				
Normal			5	5
Posture				
Normal			5	5
Grooming				
None			5	5
Rearing (Mean \pm S.D.)		8 \pm 3	10 \pm 1	
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	
Urination				
None			5	5

No significant difference between treated group and control group.

Table 2-62

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: open field observation (Recovery group, Week 3 of administration)

Parameter	Dose (mg/kg/day)	0	1000
		5	5
Arousal			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5
Stereotypy			
None		5	5
Gait			
Normal		5	5
Posture			
Normal		5	5
Grooming			
None		5	5
Rearing (Mean \pm S.D.)	8 \pm 2	8 \pm 2	
Defecation count (Mean \pm S.D.)	0 \pm 0	0 \pm 0	
Urination			
None	4	5	
Small amount	1	0	

No significant difference between treated group and control group.

Table 2-63

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorheptane

Detailed clinical signs in female rats: open field observation (Recovery group, Week 4 of administration)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Arousal			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5
Stereotypy			
None		5	5
Gait			
Normal		5	5
Posture			
Normal		5	5
Grooming			
None		5	5
Rearing (Mean+S.D.)		9± 2	8± 2
Defecation count (Mean+S.D.)		0± 0	0± 0
Urination			
None		5	5

No significant difference between treated group and control group.

Table 2-64

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in female rats: open field observation (Recovery group, Week 5 of administration)

Parameter	No. of animals	Dose (mg/kg/day)	0	1000
			5	5
Arousal				
Normal			5	5
Convulsion				
None			5	5
Abnormal behavior				
None			5	5
Stereotypy				
None			5	5
Gait				
Normal			5	5
Posture				
Normal			5	5
Grooming				
None			5	5
Rearing (Mean+S.D.)			9± 3	9± 2
Defecation count (Mean+S.D.)			0± 0	0± 0
Urination				
None			5	5

No significant difference between treated group and control group.

Table 2-65

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in female rats: open field observation (Recovery group, Week 6 of administration)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Arousal			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5
Stereotypy			
None		5	5
Gait			
Normal		5	5
Posture			
Normal		5	5
Grooming			
None		5	5
Rearing (Mean \pm S.D.)		12 \pm 4	8 \pm 4
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0
Urination			
None		5	5

No significant difference between treated group and control group.

Table 2-66

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Detailed clinical signs in male rats: open field observation (Week 1 of recovery)

Parameter	No. of animals	Dose (mg/kg/day)	0	1000
			5	5
Arousal				
Normal		5	5	
Convulsion				
None		5	5	
Abnormal behavior				
None		5	5	
Stereotypy				
None		5	5	
Gait				
Normal		5	5	
Posture				
Normal		5	5	
Grooming				
None		5	5	
Rearing (Mean \pm S.D.)		4 \pm 2	5 \pm 2	
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	
Urination				
None		4	5	
Small amount		1	0	

No significant difference between treated group and control group.

Table 2-67

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Detailed clinical signs in male rats: open field observation (Week 2 of recovery)

Parameter	Dose (mg/kg/day)		
		0	1000
	No. of animals	5	5
Arousal			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5
Stereotypy			
None		5	5
Gait			
Normal		5	5
Posture			
Normal		5	5
Grooming			
None		5	5
Rearing (Mean \pm S.D.)		5 \pm 2	7 \pm 1
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0
Urination			
None		4	5
Small amount		1	0

No significant difference between treated group and control group.

Table 2-68

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in female rats: open field observation (Week 1 of recovery)

Parameter	Dose (mg/kg/day)	0	1000
		5	5
Arousal			
Normal		5	5
Convulsion			
None		5	5
Abnormal behavior			
None		5	5
Stereotypy			
None		5	5
Gait			
Normal		5	5
Posture			
Normal		5	5
Grooming			
None		5	5
Rearing (Mean \pm S.D.)	10 \pm 2	8 \pm 1	
Defecation count (Mean \pm S.D.)	0 \pm 0	0 \pm 0	
Urination			
None		5	4
Small amount		0	1

No significant difference between treated group and control group.

Table 2-69

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Detailed clinical signs in female rats: open field observation (Week 2 of recovery)

Parameter	No. of animals	Dose (mg/kg/day)	0	1000
			5	5
Arousal				
Normal		5	5	
Convulsion				
None		5	5	
Abnormal behavior				
None		5	5	
Stereotypy				
None		5	5	
Gait				
Normal		5	5	
Posture				
Normal		5	5	
Grooming				
None		5	5	
Rearing (Mean \pm S.D.)		8 \pm 2	8 \pm 2	
Defecation count (Mean \pm S.D.)		0 \pm 0	0 \pm 0	
Urination				
None		5	5	

No significant difference between treated group and control group.

Table 2-70

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Manipulative test of male rats (Week 6 of administration)

Parameter	Dose (mg/kg/day)	0	100	300	1000
	No. of animals	5	5	5	5
Auditory response					
Normal		5	5	5	5
Approach response					
Normal		5	5	5	5
Touch response					
Normal		5	5	5	5
Tail pinch response					
Normal		5	5	5	5
Pupillary reflex					
Pass, both		5	5	5	5
Aerial righting reflex					
(Total score: Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0
Landing foot splay (mm: Mean \pm S.D.)		82 \pm 25	67 \pm 10	91 \pm 15	78 \pm 15

No significant difference in any treated groups from control group.

Table 2-71

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Manipulative test of female rats (Main group, Day 4 of lactation)

Parameter	Dose (mg/kg/day)	0	100	300	1000
	No. of animals	5	5	5	5
Auditory response					
Normal		5	5	5	5
Approach response					
Normal		5	5	5	5
Touch response					
Normal		5	5	5	5
Tail pinch response					
Normal		5	5	5	5
Pupillary reflex					
Pass, both		5	5	5	5
Aerial righting reflex					
(Total score: Mean \pm S.D.)		0 \pm 0	0 \pm 0	0 \pm 0	0 \pm 0
Landing foot splay (mm: Mean \pm S.D.)		55 \pm 13	56 \pm 12	65 \pm 14	40 \pm 10

No significant difference in any treated groups from control group.

Table 2-72

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Manipulative test of female rats (Recovery group, Week 6 of administration)

Parameter	Dose (mg/kg/day)	0	1000
	No. of animals	5	5
Auditory response			
Normal		5	5
Approach response			
Normal		5	5
Touch response			
Normal		5	5
Tail pinch response			
Normal		5	5
Pupillary reflex			
Pass, both		5	5
Aerial righting reflex			
(Total score: Mean \pm S.D.)	0 \pm 0	0 \pm 0	
Landing foot splay (mm: Mean \pm S.D.)	66 \pm 22	75 \pm 24	

No significant difference between treated group and control group.

Table 2-73

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Manipulative test of male rats (Week 2 of recovery)

Parameter	Dose (mg/kg/day)	0	1000
	No. of animals	5	5
Auditory response			
Normal		5	5
Approach response			
Normal		5	5
Touch response			
Normal		5	5
Tail pinch response			
Normal		5	5
Pupillary reflex			
Pass, both		5	5
Aerial righting reflex			
(Total score: Mean+S.D.)		0± 0	0± 0
Landing foot splay (mm: Mean+S.D.)		100±21	102±25

No significant difference between treated group and control group.

Table 2-74

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Manipulative test of female rats (Week 2 of recovery)

Parameter	Dose (mg/kg/day)	0	1000
	No. of animals	5	5
Auditory response			
Normal		5	5
Approach response			
Normal		5	5
Touch response			
Normal		5	5
Tail pinch response			
Normal		5	5
Pupillary reflex			
Pass, both		5	5
Aerial righting reflex			
(Total score: Mean \pm S.D.)		0 \pm 0	0 \pm 0
Landing foot splay (mm: Mean \pm S.D.)		79 \pm 17	78 \pm 20

No significant difference between treated group and control group.

Table 2-75

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Grip strength of male rats (Week 6 of administration)

Dose mg/kg/day		Fore limb g	Hind limb g
0	No.	5	5
	Mean	1158	777
	S.D.	179	128
100	No.	5	5
	Mean	1081	751
	S.D.	203	104
300	No.	5	5
	Mean	1354	703
	S.D.	218	99
1000	No.	5	5
	Mean	1151	770
	S.D.	162	65

No significant difference in any treated groups from control group.

Table 2-76

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Grip strength of female rats (Main group, Day 4 of lactation)

Dose mg/kg/day		Fore limb g	Hind limb g
0	No.	5	5
	Mean	1120	610
	S.D.	254	99
100	No.	5	5
	Mean	1104	782
	S.D.	182	213
300	No.	5	5
	Mean	1271	646
	S.D.	154	227
1000	No.	5	5
	Mean	1105	558
	S.D.	175	76

No significant difference in any treated groups from control group.

Table 2-77

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Grip strength of female rats (Recovery group, Week 6 of administration)

Dose mg/kg/day		Fore limb g	Hind limb g
0	No.	5	5
	Mean	966	613
	S.D.	155	101
1000	No.	5	5
	Mean	1096	726
	S.D.	103	61

No significant difference between treated group and control group.

Table 2-78

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Grip strength of male rats (Week 2 of recovery)

Dose mg/kg/day		Fore limb g	Hind limb g
0	No.	5	5
	Mean	1516	902
	S.D.	263	144
1000	No.	5	5
	Mean	1600	982
	S.D.	213	200

No significant difference between treated group and control group.

Table 2-79

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Grip strength of female rats (Week 2 of recovery)

Dose mg/kg/day		Fore limb g	Hind limb g
0	No.	5	5
	Mean	1042	814
	S.D.	190	124
1000	No.	5	5
	Mean	1365	885
	S.D.	300	239

No significant difference between treated group and control group.

Table 2-80

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Motor activity of male rats (Week 6 of administration)

Dose mg/kg/day	Interval (minutes)							
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)	
0	No. Mean S.D.	5 399 24	5 340 35	5 257 79	5 227 112	5 174 108	5 127 77	5 1524 385
100	No. Mean S.D.	5 364 31	5 317 46	5 244 106	5 233 53	5 180 112	5 170 145	5 1508 340
300	No. Mean S.D.	5 375 59	5 308 77	5 276 87	5 255 39	5 177 87	5 77 57	5 1468 175
1000	No. Mean S.D.	5 385 22	5 303 50	5 245 100	5 159 104	5 145 177	5 125 144	5 1362 521

No significant difference in any treated groups from control group.

Table 2-81

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Motor activity of female rats (Main group, Day 4 of lactation)

Dose mg/kg/day	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
0	No. Mean S.D.	5 273 130	5 134 83	5 78 49	5 97 67	5 45 40	5 12 16
100	No. Mean S.D.	5 292 25	5 188 69	5 91 15	5 36 27	5 26 10	5 32 46
300	No. Mean S.D.	5 308 90	5 175 130	5 179 153	5 124 80	5 108 94	5 124 105
1000	No. Mean S.D.	5 297 71	5 199 94	5 80 42	5 37 30	5 20 22	5 72 78
							Total(0-60)
							639 665 1019 706 198

No significant difference in any treated groups from control group.

Table 2-82

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Motor activity of female rats (Recovery group, Week 6 of administration)

Dose mg/kg/day	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
0	No. 5	5	5	5	5	5	5
	Mean 461	318	274	188	169	75	1486
	S.D. 25	40	130	93	136	114	357
1000	No. 5	5	5	5	5	5	5
	Mean 437	372	335	315	195	130	1784
	S.D. 39	51	68	138	136	225	461

No significant difference between treated group and control group.

Table 2-83

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorheptane

Motor activity of male rats (Week 2 of recovery)

Dose mg/kg/day	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
0	No. Mean S.D.	5 387 32	5 323 32	5 280 55	5 270 22	5 238 87	5 237 95
1000	No. Mean S.D.	5 346 55	5 308 63	5 186 131	5 136 124	5 151 165	5 167 156
							1735 151
							1295 535

No significant difference between treated group and control group.

Table 2-84

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Motor activity of female rats (Week 2 of recovery)

Dose mg/kg/day	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
0	No. 5	5	5	5	5	5	5
	Mean 351	253	226	242	165	212	1448
	S.D. 88	81	70	108	93	68	463
1000	No. 5	5	5	5	5	5	5
	Mean 339	262	253	221	231	220	1525
	S.D. 35	110	108	48	79	80	370

No significant difference between treated group and control group.

Table 3-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Body weight of male rats (Administration period)

Dose mg/kg/day	Day of administration												Gain 1-42
	1	4	8	11	15	18	22	25	29	32	36	39	
0	No.	12	12	12	12	12	12	12	12	12	12	12	12
0	Mean	363.8	376.8	390.8	405.0	418.3	424.0	436.7	446.1	459.8	468.7	480.4	488.8
0	S.D.	12.8	15.5	18.9	21.3	24.2	22.5	27.7	30.1	32.8	35.0	34.7	35.4
100	No.	12	12	12	12	12	12	12	12	12	12	12	12
100	Mean	364.3	377.3	393.1	405.8	419.4	423.6	441.3	450.8	463.3	471.9	484.8	491.3
100	S.D.	12.2	13.8	17.2	21.4	21.5	16.2	19.7	20.3	24.9	25.0	25.9	22.1
300	No.	12	12	12	12	12	12	12	12	12	12	12	12
300	Mean	358.2	371.9	386.6	398.2	410.9	418.3	432.6	443.8	455.6	464.4	476.2	486.5
300	S.D.	11.3	13.9	13.2	16.5	17.7	16.9	20.7	22.8	25.5	27.0	27.9	31.0
1000	No.	12	12	12	12	12	12	12	12	12	12	12	12
1000	Mean	359.8	376.4	391.5	403.9	417.0	423.0	440.1	448.7	464.3	473.4	487.4	493.7
1000	S.D.	14.9	13.8	13.8	16.4	19.0	19.8	21.7	21.8	23.7	23.0	22.8	26.9

Unit: g

No.: No. of animals

No significant difference in any treated groups from control group.

Table 3-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Body weight of female rats during the pre-mating period (Main group)

Dose mg/kg/day	Day of administration					Gain 1-15
	1	4	8	11	15	
0	No.	12	12	12	12	12
	Mean	235.3	242.9	253.4	256.9	264.1
	S.D.	10.8	9.2	10.4	9.0	8.7
100	No.	12	12	12	12	12
	Mean	235.3	243.8	253.4	257.2	265.9
	S.D.	11.7	11.0	12.7	15.8	15.8
300	No.	12	12	12	12	12
	Mean	235.7	243.3	253.1	257.9	267.4
	S.D.	10.8	8.6	11.3	13.4	13.8
1000	No.	12	12	12	12	12
	Mean	234.5	241.2	251.4	253.2	259.8
	S.D.	11.1	11.8	10.5	10.3	11.6

Unit: g

No.: No. of animals

No significant difference in any treated groups from control group.

Table 3-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Body weight of dams during the gestation period (Main group)

Dose mg/kg/day	Administration							Gain 0-20	
	0	4	7	11	14	17	20a)		
0	No. Mean S.D.	12 270.0 12.2	12 292.3 14.3	12 300.8 14.3	12 320.9 16.0	12 335.8 16.7	12 365.3 18.0	12 415.6 17.7	12 145.6 7.7
100	No. Mean S.D.	12 268.9 14.4	12 292.1 16.6	12 303.0 17.6	12 326.2 19.5	12 340.5 20.2	12 370.1 23.7	12 420.0 27.6	12 151.1 18.6
300	No. Mean S.D.	12 268.9 13.9	12 294.7 12.8	12 305.8 14.7	12 327.4 14.2	12 340.7 16.1	12 371.2 19.0	12 418.6 23.5	12 149.7 14.6
1000	No. Mean S.D.	12 269.7 13.9	12 295.2 12.4	12 307.0 14.9	12 328.8 13.2	12 344.9 11.8	12 374.3 13.6	12 421.7 17.1	12 152.0 15.0

Unit: g

No.: No. of dams

a): Day of gestation

No significant difference in any treated groups from control group.

Table 3-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Body weight of dams during the lactation period (Main group)

Dose mg/kg/day	Administration		
	0	4a)	Gain 0-4
0	No.	12	12
	Mean	316.7	335.4
	S.D.	25.6	21.1
100	No.	12	12
	Mean	331.2	351.1
	S.D.	26.7	21.9
300	No.	12	12
	Mean	326.0	348.4
	S.D.	18.3	16.8
1000	No.	12	12
	Mean	329.5	344.2
	S.D.	21.2	17.7

Unit: g

No.: No. of dams

a): Day of lactation

No significant difference in any treated groups from control group.

Table 3-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Body weight of female rats during the administration period (Recovery group)

Dose mg/kg/day	Day of administration													Gain 1-42
	1	4	8	11	15	18	22	25	29	32	36	39	42	
0	No.	5	5	5	5	5	5	5	5	5	5	5	5	5
0	Mean	232.6	243.6	255.6	256.4	266.2	268.2	277.2	280.0	285.2	289.4	295.4	301.0	300.6
0	S.D.	14.4	12.1	12.7	13.1	15.9	9.6	15.0	20.9	21.1	17.6	21.2	21.4	23.7
1000	No.	5	5	5	5	5	5	5	5	5	5	5	5	5
1000	Mean	236.6	242.2	250.6	253.2	260.4	268.2	278.4	282.4	285.6	289.8	297.2	300.0	302.8
1000	S.D.	11.0	12.3	9.6	11.8	9.9	11.0	10.9	10.5	7.9	14.1	15.3	19.4	17.2

Unit: g

No.: No. of animals

No significant difference between treated group and control group.

Table 3-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Body weight of male rats (Recovery period)

Dose mg/kg/day	Day of recovery					Gain 1-14
	1	4	8	11	14	
0	No.	5	5	5	5	5
	Mean	491.0	494.2	501.8	509.4	511.8
	S.D.	47.0	45.1	44.2	46.4	43.2
1000	No.	5	5	5	5	5
	Mean	499.6	503.2	512.4	518.4	522.4
	S.D.	26.9	27.0	29.1	27.3	26.0

Unit: g

No.: No. of animals

No significant difference between treated group and control group.

Table 3-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Body weight of female rats during the recovery period (Recovery group)

Dose mg/kg/day	Day of recovery					Gain 1-14	
	1	4	8	11	14		
0	No. Mean S.D.	5 301.2 21.0	5 304.4 24.3	5 312.2 21.6	5 309.2 25.7	5 314.6 24.9	5 18.4 4.2
1000	No. Mean S.D.	5 301.8 18.6	5 305.4 18.0	5 309.0 16.7	5 313.0 15.1	5 316.2 17.5	5 14.4 2.1

Unit: g

No.: No. of animals

No significant difference between treated group and control group.

Table 4-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Food consumption of male rats (Administration period)

Dose mg/kg/day	Day of administration									
	1	4	8	11	15	32	36	39	42	
0	No. Mean S.D.	12 27.8 1.8	12 28.7 2.0	12 27.7 1.6	12 28.8 2.2	12 27.8 3.4	12 29.0 2.3	12 28.4 1.9	12 27.8 2.6	12 29.8 2.1
100	No. Mean S.D.	12 27.8 2.6	12 28.5 2.2	12 27.9 1.9	12 28.3 2.8	12 28.5 1.6	12 28.8 2.6	12 28.2 1.9	12 26.9 1.6	12 28.5 2.5
300	No. Mean S.D.	12 24.6* 2.3D	12 28.7 2.9	12 27.5 1.3	12 27.0 2.5	12 27.4 2.5	12 28.9 2.6	12 27.2 2.4	12 28.2 3.0	12 28.3 2.7
1000	No. Mean S.D.	12 26.4 3.7	12 29.8 2.1	12 28.3 2.0	12 28.3 2.1	12 28.3 2.8	12 29.9 2.5	12 28.6 1.4	12 28.7 2.5	12 29.6 2.8

Unit: g/rat/day

No.: No. of animals

*: p<0.05 (Significant difference from control group)

D: Dunnett's test

Table 4-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Food consumption of female rats during the pre-mating period (Main group)

Dose mg/kg/day	Day of administration					
	1	4	8	11	15	
0	No. Mean S.D.	12 18.5 3.6	12 20.7 2.7	12 22.7 2.5	12 21.0 2.2	12 21.8 2.3
100	No. Mean S.D.	12 17.9 3.0	12 21.2 1.8	12 21.7 1.6	12 21.2 2.7	12 21.4 2.2
300	No. Mean S.D.	12 18.9 1.9	12 22.3 1.9	12 23.3 2.0	12 21.3 3.2	12 22.1 3.1
1000	No. Mean S.D.	12 18.5 2.9	12 21.2 2.6	12 21.8 2.1	12 20.0 2.9	12 20.0 2.9

Unit: g/rat/day

No.: No. of animals

No significant difference in any treated groups from control group.

Table 4-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Food consumption of dams during the gestation period (Main group)

Dose mg/kg/day	Administration						
	1	4	7	11	14	17	20a)
0	No.	12	12	12	12	12	12
0	Mean	22.6	25.6	24.4	25.1	25.9	28.3
0	S.D.	3.3	2.5	1.4	1.9	2.5	2.8
100	No.	12	12	12	12	12	12
100	Mean	22.4	25.3	25.1	27.0	26.4	27.8
100	S.D.	3.3	2.7	3.1	3.2	2.2	2.5
300	No.	12	12	12	12	12	12
300	Mean	23.3	26.5	25.8	27.8*	26.0	27.8
300	S.D.	3.0	3.1	1.7	2.2D	1.8	3.3
1000	No.	12	12	12	12	12	12
1000	Mean	23.2	25.7	26.0	26.4	25.9	28.5
1000	S.D.	2.7	2.5	2.5	2.5	2.1	2.2

Unit: g/rat/day

No.: No. of dams

a): Day of gestation

*: p<0.05 (Significant difference from control group)

D: Dunnett's test

Table 4-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Food consumption of dams during the lactation period (Main group)

Dose mg/kg/day	Administration		
		2	4a)
0	No.	12	12
0	Mean	26.7	43.7
0	S.D.	6.3	5.7
100	No.	12	12
100	Mean	29.1	46.5
100	S.D.	5.8	6.4
300	No.	12	12
300	Mean	28.2	47.4
300	S.D.	5.6	5.9
1000	No.	12	12
1000	Mean	27.6	41.5
1000	S.D.	4.3	5.1

Unit: g/rat/day

No.: No. of dams

a): Day of lactation

No significant difference in any treated groups from control group.

Table 4-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Food consumption of female rats during the administration period (Recovery group)

Dose mg/kg/day	Day of administration								
	1	4	8	11	15	32	36	39	42
0	No.	5	5	5	5	5	5	5	5
0	Mean	16.8	22.6	23.4	19.4	21.2	21.0	21.6	20.6
0	S.D.	5.0	1.9	2.2	4.9	4.8	1.9	2.5	1.2
1000	No.	5	5	5	5	5	5	5	5
1000	Mean	20.8	23.6	23.0	20.0	21.4	23.4	23.4	19.6
1000	S.D.	2.4	2.7	2.0	3.7	4.7	3.9	4.4	4.5
									22.6

Unit: g/rat/day

No.: No. of animals

No significant difference between treated group and control group.

Table 4-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Food consumption of male rats (Recovery period)

Dose mg/kg/day	Day of recovery					
	1	4	8	11	14	
0	No. Mean S.D.	5 28.0 2.7	5 27.4 0.9	5 29.6 1.1	5 29.8 2.4	5 29.2 2.2
1000	No. Mean S.D.	5 26.6 2.6	5 27.2 0.4	5 27.2 3.7	5 29.0 3.1	5 28.2 3.1

Unit: g/rat/day

No.: No. of animals

No significant difference between treated group and control group.

Table 4-7

A combined-repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Food consumption of female rats during the recovery period (Recovery group)

Dose mg/kg/day	Day of recovery					
	1	4	8	11	14	
0	No. Mean S.D.	5 19.6 1.7	5 19.8 2.0	5 23.4 1.9	5 18.6 5.0	5 22.4 3.8
1000	No. Mean S.D.	5 19.8 3.7	5 20.0 3.4	5 23.0 2.2	5 23.4 1.7	5 23.8 3.8

Unit: g/rat/day

No.: No. of animals

No significant difference between treated group and control group.

Table 5-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Urinalysis of male rats (Week 6 of administration)

Dose mg/kg/day	No.	pH									1) Protein					2) Ketone body					3) Glucose							
		5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	-	+-	+	++	+++	++++	-	+-	+	++	+++	++++	-	+-	+	++	+++	++++
0	5	0	0	0	0	2	0	0	3	0	0	3	2	0	0	0	1	4	0	0	0	0	5	0	0	0	0	0
100	5	0	0	0	0	0	1	2	2	0	1	3	1	0	0	0	4	1	0	0	0	0	5	0	0	0	0	0
300	5	0	0	0	0	1	1	0	2	1	0	3	2	0	0	0	2	2	1	0	0	0	5	0	0	0	0	0
1000	5	0	0	0	0	0	1	1	2	1	0	3	2	0	0	0	3	2	0	0	0	0	5	0	0	0	0	0

1) - : <10 mg/dL

+- : 10 - 25 mg/dL

+ : 26 - 85 mg/dL

++ : 86 - 250 mg/dL

+++ : 251 - 600 mg/dL

++++ : >600 mg/dL

2) - : <5 mg/dL

+- : 5 - 7.5 mg/dL

+ : 7.6 - 30 mg/dL

++ : 31 - 70 mg/dL

+++ : 71 - 125 mg/dL

++++ : >125 mg/dL

3) - : <30 mg/dL

+- : 30 - 60 mg/dL

+ : 61 - 125 mg/dL

++ : 126 - 250 mg/dL

+++ : 251 - 750 mg/dL

++++ : >750 mg/dL

Table 5-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Urinalysis of male rats (Week 6 of administration)

Dose mg/kg/day	No.	4) Occult blood				5) Bilirubin					6) Urobilinogen					7) Color		
		-	+-	+	++	+++	-	+	++	+++	-	+	++	+++	++++	LY	Y	DY
0	5	5	0	0	0	0	5	0	0	0	0	5	0	0	0	0	5	0
100	5	4	1	0	0	0	5	0	0	0	0	5	0	0	0	0	5	0
300	5	5	0	0	0	0	5	0	0	0	0	5	0	0	0	0	5	0
1000	5	5	0	0	0	0	5	0	0	0	0	4	1	0	0	0	5	0

4) - : <0.03 mg/dL +- : 0.03 - 0.05 mg/dL + : 0.06 - 0.15 mg/dL ++ : 0.16 - 0.75 mg/dL +++ : >0.75 mg/dL

5) - : <0.5 mg/dL + : 0.5 - 1.5 mg/dL ++ : 1.6 - 5.0 mg/dL +++ : 5.1 - 10.0 mg/dL ++++ : >10.0 mg/dL

6) +- : <2.0 mg/dL + : 2.0 - 3.5 mg/dL ++ : 3.6 - 7.0 mg/dL +++ : 7.1 - 12.0 mg/dL ++++ : >12.0 mg/dL

7) LY : Light yellow Y : Yellow DY : Dark yellow

Table 5-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Urinalysis of male rats (Week 6 of administration)

URINE SEDIMENT																																			
Dose mg/kg/day	No.	RBC						WBC						SEC						SREC			Cast			CRYSTALLIZATION									
		-	+-	+	++	+++	-	-	+-	+	++	+++	-	-	+-	+	++	+++	-	+-	+	-	+-	+	++	+++	-	+-	+	++	+++				
0	5	5	0	0	0	0	0	5	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	1	4	0	0	0	5	0	0	0	0		
100	5	5	0	0	0	0	0	5	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	5	0	0	0	5	0	0	0	0		
300	5	5	0	0	0	0	0	5	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	0	5	0	0	0	5	0	0	0	0	
1000	5	5	0	0	0	0	0	5	0	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	0	5	0	0	0	5	0	0	0	0

SEC	: Squamous Epithelial Cell	-	: Negative
SREC	: Small Round Epithelial Cell	+-	: Slight
PS	: Phosphate Salts	+	: Mild
CO	: Calcium Oxalate	++	: Moderate
		+++	: Severe

Table 5-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Water intake and urinalysis (Week 6 of administration)

Male

Dose mg/kg/day	No.		Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
0	5	Mean	45	17.8	1999
		S.D.	10	6.8	426
100	5	Mean	46	19.5	1796
		S.D.	9	7.5	218
300	5	Mean	41	16.6	1994
		S.D.	7	5.1	213
1000	5	Mean	41	19.7	1901
		S.D.	14	7.0	468

No significant difference in any treated groups from control group.

Table 5-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Urinalysis of male rats (Week 2 of recovery)

Dose mg/kg/day	No.	pH									1) Protein					2) Ketone body					3) Glucose																
		5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	-	+-	+	++	+++	++++	-	+-	+	++	+++	++++	-	+-	+	++	+++	++++									
0	5	0	0	0	1	0	1	2	1		1	1	3	0	0	0	3	1	1	0	0	0	5	0	0	0	0	0									
1000	5	0	0	0	0	3	0	2	0		1	2	2	0	0	0	2	2	1	0	0	0	5	0	0	0	0	0									
1)	-	: <10 mg/dL		++ : 10 - 25 mg/dL		+ : 26 - 85 mg/dL		++ : 86 - 250 mg/dL		+++ : 251 - 600 mg/dL		++++ : >600 mg/dL		- : <5 mg/dL		++ : 5 - 7.5 mg/dL		+ : 7.6 - 30 mg/dL		++ : 31 - 70 mg/dL		+++ : 71 - 125 mg/dL		++++ : >125 mg/dL		- : <30 mg/dL		++ : 30 - 60 mg/dL		+ : 61 - 125 mg/dL		++ : 126 - 250 mg/dL		+++ : 251 - 750 mg/dL		++++ : >750 mg/dL	

Table 5-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Urinalysis of male rats (Week 2 of recovery)

Dose mg/kg/day	No.	4) Occult blood				5) Bilirubin					6) Urobilinogen					7) Color		
		-	+-	+	++	+++	-	+	++	+++	-	+	++	+++	++++	LY	Y	DY
0	5	5	0	0	0	0	5	0	0	0	0	5	0	0	0	0	5	0
1000	5	5	0	0	0	0	5	0	0	0	0	3	2	0	0	0	5	0

4) - : <0.03 mg/dL +- : 0.03 - 0.05 mg/dL + : 0.06 - 0.15 mg/dL ++ : 0.16 - 0.75 mg/dL +++ : >0.75 mg/dL

5) - : <0.5 mg/dL + : 0.5 - 1.5 mg/dL ++ : 1.6 - 5.0 mg/dL +++ : 5.1 - 10.0 mg/dL ++++ : >10.0 mg/dL

6) +- : <2.0 mg/dL + : 2.0 - 3.5 mg/dL ++ : 3.6 - 7.0 mg/dL +++ : 7.1 - 12.0 mg/dL ++++ : >12.0 mg/dL

7) LY : Light yellow Y : Yellow DY : Dark yellow

Table 5-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Urinalysis of male rats (Week 2 of recovery)

Dose mg/kg/day	No.	URINE SEDIMENT												CRYSTALLIZATION						PS			CO							
		RBC				WBC				SEC				SREC				Cast			PS			CO						
		-	+-	+	++	+++	-	+-	+	++	+++	-	+-	+	++	+++	-	+-	+	-	+-	+	++	+++	-	+-	+	++	+++	
0	5	5	0	0	0	0	5	0	0	0	0	0	5	0	0	0	0	5	0	0	1	3	1	0	0	5	0	0	0	0
1000	5	5	0	0	0	0	5	0	0	0	0	0	5	0	0	0	0	5	0	0	0	5	0	0	0	5	0	0	0	0

SEC : Squamous Epithelial Cell - : Negative
 SREC : Small Round Epithelial Cell +- : Slight
 PS : Phosphate Salts + : Mild
 CO : Calcium Oxalate ++ : Moderate
 +++ : Severe

Table 5-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorheptane

Water intake and urinalysis (Week 2 of recovery)

Male

Dose mg/kg/day	No.		Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
0	5	Mean S.D.	40 10	14.8 7.9	2108 409
1000	5	Mean S.D.	43 12	18.6 9.4	1847 513

No significant difference between treated group and control group.

Table 6-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Hematology (Week 6 of administration)

Male

Dose mg/kg/day	No.		RBC ×10 ⁴ /μL	Hb g/dL	Ht %	MCV fL	MCH pg	MCHC g/dL	Reticu- locyte %	Plate- let ×10 ⁴ /μL	PT s	APTT s	Fibri- nogen mg/dL	WBC ×10 ² /μL
0	5	Mean	871	16.2	44.6	51.2	18.6	36.4	1.6	129.6	15.3	21.4	305	104.3
		S.D.	30	0.3	1.2	2.1	0.8	0.8	0.4	5.8	2.1	2.7	15	23.4
100	5	Mean	888	16.2	43.8	49.4	18.2	36.9	1.7	126.1	13.9	20.7	302	108.5
		S.D.	25	0.7	1.3	1.4	0.7	0.5	0.3	4.1	1.4	3.2	21	12.2
300	5	Mean	922	16.4	44.6	48.4*	17.8	36.8	1.5	120.7	14.8	18.8	326	103.5
		S.D.	15	0.2	0.5	0.6D	0.3	0.3	0.2	6.5	2.5	1.5	19	12.4
1000	5	Mean	864	16.1	43.5	50.4	18.7	37.0	1.6	111.7*	14.4	19.3	291	128.5
		S.D.	56	0.6	1.7	2.0	0.8	0.3	0.3	18.6D	1.9	1.9	15	40.8

* : p<0.05 (Significant difference from control group)

D : Dunnett's test

Table 6-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Hematology (Week 6 of administration)

Male

Dose mg/kg/day	No.	Differential leukocyte counts (%)						Differential leukocyte counts ($\times 10^2/\mu\text{L}$)						
		Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	
0	5	Mean	76.5	19.3	1.3	0.4	1.8	0.7	79.9	20.1	1.3	0.4	1.8	0.7
		S.D.	4.4	3.4	0.6	0.1	0.9	0.4	18.7	5.8	0.4	0.2	0.7	0.4
100	5	Mean	71.8	23.9	1.5	0.3	2.1	0.5	77.9	25.8	1.7	0.3	2.2	0.5
		S.D.	6.5	6.3	0.5	0.1	0.9	0.2	11.9	7.3	0.7	0.2	0.9	0.2
300	5	Mean	74.7	21.6	1.2	0.3	1.8	0.4	77.6	22.1	1.3	0.3	1.8	0.5
		S.D.	8.8	9.1	0.4	0.1	0.5	0.2	14.4	8.3	0.6	0.1	0.7	0.2
1000	5	Mean	75.7	20.3	1.1	0.4	1.9	0.6	98.1	25.4	1.3	0.5	2.4	0.7
		S.D.	8.9	8.4	0.6	0.1	0.5	0.2	35.2	13.4	0.5	0.2	1.1	0.3

LUC : Large unstained cells

No significant difference in any treated groups from control group.

Table 6-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Hematology (Day 5 of lactation)

Female

Dose mg/kg/day	No.	RBC X10 ⁴ /μL	Hb g/dL	Ht %	MCV fL	MCH pg	MCHC g/dL	Reticu- locyte %	Plate- let X10 ⁴ /μL	PT s	APTT s	Fibri- nogen mg/dL	WBC X10 ² /μL	
0	5	Mean S.D.	727 39	14.2 1.1	39.6 2.9	54.4 1.7	19.5 0.6	36.0 0.6	6.1 1.1	155.8 11.9	13.0 1.1	18.6 4.7	381 63	125.3 25.1
100	5	Mean S.D.	696 43	13.6 0.6	37.1 1.8	53.4 2.1	19.5 0.9	36.5 0.6	6.0 1.0	167.1 24.6	12.5 0.7	16.0 1.4	339 23	129.8 38.3
300	5	Mean S.D.	717 53	13.9 1.0	38.3 2.9	53.4 1.4	19.4 0.6	36.2 0.3	5.6 0.9	151.3 18.1	12.7 1.1	16.2 3.0	322 44	140.5 59.1
1000	5	Mean S.D.	725 62	14.0 0.6	38.6 1.6	53.5 2.9	19.3 0.9	36.2 0.4	5.0 2.4	163.5 18.5	12.1 0.2	16.4 1.3	297* 37D	120.0 21.4

* : p<0.05 (Significant difference from control group)

D : Dunnett's test

Table 6-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Hematology (Day 5 of lactation)

Female

Dose mg/kg/day	No.	Differential leukocyte counts (%)						Differential leukocyte counts ($\times 10^2/\mu\text{L}$)						
		Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	
0	5	Mean	60.2	35.6	0.6	0.3	2.4	0.9	76.0	44.1	0.7	0.3	3.1	1.1
		S.D.	7.1	7.5	0.1	0.1	1.2	0.2	19.6	9.6	0.1	0.1	1.5	0.3
100	5	Mean	65.2	30.6	0.7	0.2	2.4	0.9	83.4	40.9	0.9	0.3	3.1	1.2
		S.D.	7.5	7.0	0.2	0.1	0.9	0.5	21.0	18.8	0.3	0.2	1.5	0.9
300	5	Mean	61.6	33.9	0.8	0.2	2.6	1.0	82.4	51.6	1.1	0.3	3.9	1.3
		S.D.	10.6	10.6	0.2	0.1	0.7	0.5	25.4	35.2	0.4	0.2	2.5	0.5
1000	5	Mean	58.3	37.3	0.8	0.2	2.5	1.0	70.3	44.2	0.9	0.3	3.0	1.2
		S.D.	7.2	6.9	0.2	0.1	0.3	0.5	17.5	8.4	0.3	0.1	0.8	0.9

LUC : Large unstained cells

No significant difference in any treated groups from control group.

Table 6-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Hematology (Day 14 of recovery)

Male

Dose mg/kg/day	No.	RBC X10 ⁴ /μL	Hb g/dL	Ht %	MCV fL	MCH pg	MCHC g/dL	Reticu- locyte %	Plate- let X10 ⁴ /μL	PT s	APTT s	Fibri- nogen mg/dL	WBC X10 ² /μL
0	5	Mean 923	16.5	44.6	48.3	17.9	37.1	1.4	117.9	13.7	19.9	333	107.0
		S.D. 29	0.6	1.5	0.9	0.4	0.4	0.3	16.7	0.6	1.5	8	38.7
1000	5	Mean 886*	16.4	43.7	49.3	18.5	37.5	1.5	117.5	15.4*	23.8** 1.2T	331 33	97.9 21.0
		S.D. 21T	0.5	1.4	1.8	0.8	0.4	0.4	11.9	1.4T			

* : p<0.05 ; ** : p<0.01 (Significant difference from control group)

T : Student's t-test

Table 6-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Hematology (Day 14 of recovery)

Male

Dose mg/kg/day	No.	Differential leukocyte counts (%)						Differential leukocyte counts ($\times 10^2/\mu\text{L}$)						
		Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	
0	5	Mean	75.0	20.6	1.1	0.3	2.3	0.6	80.3	22.0	1.2	0.3	2.5	0.7
		S.D.	3.4	3.6	0.2	0.1	0.5	0.2	28.7	9.1	0.4	0.2	1.2	0.2
1000	5	Mean	76.2	19.1	1.6*	0.3	2.0	0.7	74.7	18.6	1.5	0.3	2.0	0.7
		S.D.	3.7	3.5	0.4T	0.1	0.7	0.3	17.2	3.9	0.4	0.2	0.8	0.5

LUC : Large unstained cells

* : p<0.05 (Significant difference from control group)

T : Student's t-test

Table 6-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Hematology (Day 14 of recovery)

Female

Dose mg/kg/day	No.	RBC X10 ⁴ /μL	Hb g/dL	Ht %	MCV fL	MCH pg	MCHC g/dL	Reticu- locyte %	Plate- let X10 ⁴ /μL	PT s	APTT s	Fibri- nogen mg/dL	WBC X10 ² /μL	
0	5	Mean S.D.	817 37	15.4 0.7	40.4 1.7	49.5 0.7	18.8 0.2	38.1 0.2	1.4 0.5	144.4 27.9	11.4 1.0	15.7 1.3	248 26	73.6 23.7
1000	5	Mean S.D.	842 10	16.1 0.5	42.4 1.6	50.4 1.6	19.1 0.6	37.9 0.4	1.3 0.3	121.3 7.1	11.6 0.5	16.2 1.5	248 26	69.8 6.2

No significant difference between treated group and control group.

Table 6-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Hematology (Day 14 of recovery)

Female

Dose mg/kg/day	No.	Differential leukocyte counts (%)						Differential leukocyte counts ($\times 10^3/\mu\text{L}$)						
		Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	
0	5	Mean	73.5	22.1	1.7	0.2	1.8	0.6	55.6	14.9	1.1	0.2	1.3	0.5
		S.D.	9.7	8.9	0.5	0.1	0.7	0.3	23.8	3.4	0.4	0.1	0.3	0.3
1000	5	Mean	75.2	20.2	1.8	0.3	1.9	0.6	52.5	14.1	1.3	0.2	1.3	0.4
		S.D.	4.2	4.8	0.8	0.1	0.4	0.2	6.2	3.5	0.6	0.1	0.2	0.2

LUC : Large unstained cells

No significant difference between treated group and control group.

Table 7-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Blood chemistry (Week 6 of administration)

Male

Dose mg/kg/day	No.		AST (GOT) IU/L	ALT (GPT) IU/L	LDH IU/L	γ -GTP IU/L	A1P IU/L	T.cho mg/dL	TG mg/dL	PL mg/dL	T.bili- rubin mg/dL	Glucose mg/dL
0	5	Mean	62	30	47	1	351	44	45	77	0.1	141
		S.D.	5	3	4	0	34	9	16	11	0.0	12
100	5	Mean	69	30	55	1	463	50	45	85	0.1	129
		S.D.	9	4	7	0	82	11	15	14	0.0	10
300	5	Mean	71	33	55	1	426	43	46	78	0.1	140
		S.D.	7	3	8	0	76	4	14	7	0.0	11
1000	5	Mean	67	29	53	1	462	45	42	80	0.1	132
		S.D.	4	3	12	0	115	10	16	10	0.0	7

No significant difference in any treated groups from control group.

Table 7-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Blood chemistry (Week 6 of administration)

Male

Dose mg/kg/day	No.		BUN mg/dL	Crea- tinine mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	Albumin g/dL	A/G
0	5	Mean	15	0.29	146	5.0	109	9.6	6.6	6.1	2.7	0.82
		S.D.	2	0.04	1	0.2	0	0.1	0.4	0.2	0.1	0.03
100	5	Mean	16	0.27	145	4.7	108	9.7	6.2	6.2	2.7	0.77
		S.D.	2	0.01	1	0.4	1	0.3	0.6	0.1	0.1	0.04
300	5	Mean	15	0.29	145	4.7	107*	9.6	6.6	6.1	2.8	0.85
		S.D.	2	0.02	1	0.3	2D	0.2	0.7	0.3	0.1	0.11
1000	5	Mean	15	0.30	146	4.7	108	9.6	6.5	6.0	2.7	0.80
		S.D.	3	0.05	1	0.2	1	0.1	0.4	0.2	0.1	0.05

* : p<0.05 (Significant difference from control group)

D : Dunnett's test

Table 7-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Blood chemistry (Day 5 of lactation)

Female

Dose mg/kg/day	No.		AST (GOT) IU/L	ALT (GPT) IU/L	LDH IU/L	γ -GTP IU/L	AlP IU/L	T.cho mg/dL	TG mg/dL	PL mg/dL	T.bili- rubin mg/dL	Glucose mg/dL
0	5	Mean	82	48	47	1	225	54	52	108	0.1	119
		S.D.	17	4	8	0	112	5	23	11	0.0	10
100	5	Mean	76	44	48	1	203	59	45	108	0.1	120
		S.D.	10	4	12	0	47	17	14	22	0.0	13
300	5	Mean	83	52	37	1	216	60	61	116	0.1	124
		S.D.	17	14	9	1	28	14	18	20	0.0	11
1000	5	Mean	83	47	57	1	201	47	64	95	0.1	120
		S.D.	11	7	20	1	53	9	32	16	0.0	7

No significant difference in any treated groups from control group.

Table 7-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Blood chemistry (Day 5 of lactation)

Female

Dose mg/kg/day	No.	BUN mg/dL	Crea- tinine mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	Albumin g/dL	A/G
0	5	Mean 2	0.34 0.04	143 3	4.6 0.5	110 3	10.0 0.2	7.1 0.7	6.4 0.2	2.9 0.1	0.85 0.03
100	5	Mean 4	0.32 0.04	141 2	5.0 0.4	107* 2D	10.0 0.3	7.5 0.3	6.4 0.3	2.9 0.2	0.85 0.05
300	5	Mean 2	0.33 0.04	143 2	4.6 0.5	107* 1D	10.0 0.2	7.7 1.1	6.3 0.2	2.9 0.1	0.82 0.05
1000	5	Mean 1	0.33 0.02	143 1	4.3 0.4	109 2	10.0 0.3	6.9 0.7	6.2 0.2	2.9 0.1	0.87 0.04

* : p<0.05 (Significant difference from control group)

D : Dunnett's test

Table 7-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Blood chemistry (Day 14 of recovery)

Male

Dose mg/kg/day	No.		AST (GOT) IU/L	ALT (GPT) IU/L	LDH IU/L	γ -GTP IU/L	A1P IU/L	T.cho mg/dL	TG mg/dL	PL mg/dL	T.bili- rubin mg/dL	Glucose mg/dL
0	5	Mean	73	32	54	1	395	40	55	78	0.1	144
		S.D.	10	6	10	0	46	6	19	8	0.0	9
1000	5	Mean	68	32	52	2	351	44	50	78	0.1	139
		S.D.	8	3	13	1	30	8	30	13	0.0	9

No significant difference between treated group and control group.

Table 7-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Blood chemistry (Day 14 of recovery)

Male

Dose mg/kg/day	No.		BUN mg/dL	Crea- tinine mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	Albumin g/dL	A/G
0	5	Mean	18	0.31	143	4.7	106	9.4	6.1	6.1	2.8	0.83
		S.D.	3	0.03	2	0.3	1	0.1	0.6	0.3	0.1	0.07
1000	5	Mean	17	0.31	145	4.8	107	9.4	6.3	6.1	2.7	0.81
		S.D.	2	0.04	1	0.2	1	0.1	0.4	0.2	0.1	0.08

No significant difference between treated group and control group.

Table 7-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Blood chemistry (Day 14 of recovery)

Female

Dose mg/kg/day	No.		AST (GOT) IU/L	ALT (GPT) IU/L	LDH IU/L	γ -GTP IU/L	A1P IU/L	T.cho mg/dL	TG mg/dL	PL mg/dL	T.bili- rubin mg/dL	Glucose mg/dL
0	5	Mean	66	31	42	2	173	72	30	142	0.1	117
		S.D.	7	11	6	1	61	27	14	47	0.0	5
1000	5	Mean	62	25	37	2	202	59	16	111	0.1	125
		S.D.	9	6	14	1	103	23	5	30	0.0	21

No significant difference between treated group and control group.

Table 7-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Blood chemistry (Day 14 of recovery)

Female

Dose mg/kg/day	No.		BUN mg/dL	Crea- tinine mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	Albumin g/dL	A/G
0	5	Mean	20	0.37	143	4.4	110	9.7	5.1	6.9	3.3	0.93
		S.D.	3	0.04	1	0.3	2	0.3	0.8	0.5	0.4	0.14
1000	5	Mean	20	0.41	143	4.3	110	9.4	5.2	6.4	3.0	0.89
		S.D.	3	0.05	1	0.3	1	0.2	0.3	0.3	0.1	0.07

No significant difference between treated group and control group.

Table 8-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Organ weight of male rats (Main group)

	Dose mg/kg/day	Body weight g	Brain g(g/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
	0	No. Mean S.D.	5 476 26	5 2.11 0.07	5 24.0 4.3	5 334 75	5 1.38 0.04
Absolute	100	No. Mean S.D.	5 461 21	5 2.15 0.12	5 24.2 3.1	5 311 57	5 12.68 0.77
	300	No. Mean S.D.	5 451 34	5 2.06 0.07	5 20.8 2.3	5 275 54	5 12.23 0.84
	1000	No. Mean S.D.	5 468 28	5 2.11 0.06	5 22.4 3.3	5 369 58	5 11.95 0.98
	0	No. Mean S.D.	5 0.44 0.02	5 5.1 0.9	5 70 13	5 0.29 0.01	5 2.67 0.14
Relative	100	No. Mean S.D.	5 0.47 0.02	5 5.3 0.6	5 67 11	5 0.28 0.02	5 2.65 0.15
	300	No. Mean S.D.	5 0.46 0.04	5 4.7 0.8	5 61 11	5 0.28 0.01	5 2.65 0.13
	1000	No. Mean S.D.	5 0.45 0.02	5 4.8 0.5	5 79 9	5 0.29 0.02	5 2.66 0.11

No significant difference in any treated groups from control group.

Table 8-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Organ weight of male rats (Main group)

	Dose mg/kg/day	Spleen g(g/100g BW)	Kidney (R+L) g(g/100g BW)	Adrenal (R+L) mg(mg/100g BW)	Body weight g	Testis (R+L) g(g/100g BW)	Epididymis (R+L) mg(mg/100g BW)
	0	No. Mean S.D.	5 0.79 0.12	5 3.08 0.30	5 57 10	7 471 23	7 3.27 0.13
Absolute	100	No. Mean S.D.	5 0.81 0.11	5 3.13 0.23	5 59 5	12 467 25	12 3.20 0.29
	300	No. Mean S.D.	5 0.70 0.01	5 3.11 0.19	5 63 3	12 459 30	12 3.26 0.34
	1000	No. Mean S.D.	5 0.85 0.09	5 3.27 0.38	5 63 6	7 475 26	7 3.34 0.18
	0	No. Mean S.D.	5 0.17 0.02	5 0.65 0.04	5 12 2	7 0.69 0.05	7 274 21
Relative	100	No. Mean S.D.	5 0.18 0.02	5 0.68 0.03	5 13 1	12 0.69 0.06	12 278 22
	300	No. Mean S.D.	5 0.16 0.01	5 0.69 0.04	5 14 1	12 0.71 0.08	12 279 38
	1000	No. Mean S.D.	5 0.18 0.01	5 0.70 0.08	5 13 1	7 0.71 0.06	7 271 20

No significant difference in any treated groups from control group.

Table 8-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Organ weight of female rats (Main group)

	Dose mg/kg/day	Body weight g	Brain g(g/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
	0	No. Mean S.D.	5 295 25	5 1.92 0.08	5 18.8 4.2	5 209 60	5 0.93 0.06
Absolute	100	No. Mean S.D.	5 322 18	5 1.99 0.08	5 19.0 2.3	5 235 55	5 0.98 0.09
	300	No. Mean S.D.	5 307 23	5 1.97 0.04	5 17.2 2.4	5 224 65	5 0.98 0.06
	1000	No. Mean S.D.	5 303 14	5 1.99 0.10	5 18.1 3.0	5 218 80	5 0.96 0.08
	0	No. Mean S.D.	5 0.65 0.04	5 6.4 1.3	5 70 16	5 0.32 0.01	5 3.35 0.15
Relative	100	No. Mean S.D.	5 0.62 0.04	5 5.9 0.7	5 73 19	5 0.31 0.02	5 3.15 0.21
	300	No. Mean S.D.	5 0.64 0.04	5 5.6 0.6	5 73 20	5 0.32 0.01	5 3.28 0.15
	1000	No. Mean S.D.	5 0.65 0.05	5 6.0 1.1	5 72 25	5 0.32 0.02	5 3.17 0.11

No significant difference in any treated groups from control group.

Table 8-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Organ weight of female rats (Main group)

	Dose mg/kg/day	Spleen g(g/100g BW)	Kidney (R+L) g(g/100g BW)	Adrenal (R+L) mg(mg/100g BW)
Absolute	0	No.	5	5
		Mean	0.70	2.03
		S.D.	0.10	0.14
	100	No.	5	5
		Mean	0.81	2.24
		S.D.	0.10	0.13
	300	No.	5	5
		Mean	0.72	2.16
		S.D.	0.11	0.14
	1000	No.	5	5
		Mean	0.72	2.15
		S.D.	0.10	0.10
Relative	0	No.	5	5
		Mean	0.24	0.69
		S.D.	0.03	0.03
	100	No.	5	5
		Mean	0.25	0.69
		S.D.	0.04	0.02
	300	No.	5	5
		Mean	0.23	0.70
		S.D.	0.03	0.04
	1000	No.	5	5
		Mean	0.24	0.71
		S.D.	0.03	0.03

No significant difference in any treated groups from control group.

Table 8-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Organ weight of male rats (Recovery group)

	Dose mg/kg/day	No. of animals	Body weight g	Brain g(g/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
Absolute	0	5	Mean S.D.	482 41	2.05 0.09	22.5 0.5	249 38	1.34 0.07
	1000	5	Mean S.D.	491 24	2.11 0.03	21.8 1.3	239 75	1.35 0.12
Relative	0	5	Mean S.D.		0.43 0.02	4.7 0.5	52 10	0.28 0.01
	1000	5	Mean S.D.		0.43 0.02	4.5 0.4	48 14	2.58 0.15

No significant difference between treated group and control group.

Table 8-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Organ weight of male rats (Recovery group)

	Dose mg/kg/day	No. of animals	Spleen g(g/100g BW)	Kidney (R+L) g(g/100g BW)	Adrenal (R+L) mg(mg/100g BW)	Testis (R+L) g(g/100g BW)	Epididymis (R+L) mg(mg/100g BW)
Absolute	0	5	Mean 0.76	3.21	56	3.15	1266
			S.D. 0.12	0.29	6	0.31	56
	1000	5	Mean 0.68	3.22	66*	3.31	1341
			S.D. 0.08	0.41	5T	0.29	50
Relative	0	5	Mean 0.16	0.66	11	0.65	264
			S.D. 0.01	0.02	1	0.05	20
	1000	5	Mean 0.14*	0.65	13**	0.67	274
			S.D. 0.01T	0.06	1T	0.05	17

*: p<0.05; **: p<0.01 (Significant difference from control group)

T: Student's t-test

Table 8-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Organ weight of female rats (Recovery group)

	Dose mg/kg/day	No. of animals	Body weight g	Brain g(g/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
Absolute	0	5	Mean S.D.	296 22	1.94 0.11	16.8 3.4	244 65	0.89 0.11
	1000	5	Mean S.D.	297 18	1.94 0.04	16.6 2.1	243 54	0.90 0.07
Relative	0	5	Mean S.D.		0.66 0.01	5.6 0.8	82 20	0.30 0.03
	1000	5	Mean S.D.		0.66 0.04	5.6 0.8	81 16	0.30 0.03

*: p<0.05 (Significant difference from control group)

T: Student's t-test

Table 8-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Organ weight of female rats (Recovery group)

	Dose mg/kg/day	No. of animals	Spleen g(g/100g BW)	Kidney (R+L) g(g/100g BW)	Adrenal (R+L) mg(mg/100g BW)
Absolute	0	5	Mean S.D.	0.61 0.18	2.03 0.23
	1000	5	Mean S.D.	0.55 0.10	74 12
Relative	0	5	Mean S.D.	0.21 0.03	28 5
	1000	5	Mean S.D.	0.18 0.03	25 2

No significant difference between treated group and control group.

Table 9-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Gross pathological findings (End of administration period)

Organs Findings	Sex: Number: Dose(mg/kg/day):	M	M	M	M	F	F	F	F
		0 7	100 12	300 12	1000 7	0 12	100 12	300 12	1000 12
Epididymis									
Small		0	0	1	0	-	-	-	-
Stomach									
Focus, dark red,glandular stomach		0	0	0	0	2	0	1	2
Testis									
Small		0	0	1	0	-	-	-	-

- : Not applicable

Table 9-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Gross pathological findings (Recovery period)

Organs Findings	Sex: Number:	M 0 5	M 1000 5	F 0 5	F 1000 5
Liver Hepatodiaphragmatic nodule		0	0	0	1

Table 10-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Histopathological findings (End of administration period)

Organs Findings	Sex: Number: Dose(mg/kg/day): Number:	M 0	M 100	M 300	M 1000	F 0	F 100	F 300	F 1000
		7	12	12	7	12	12	12	12
Adrenal									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Bone+Bone marrow,femoral									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Bone+Bone marrow,sternal									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Cerebellum									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Cerebrum									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Epididymis									
Number examined		5	0	1	-	-	-	-	-
Not remarkable		5	0	0	-	-	-	-	-
Hypospermia		0	0	1	-	-	-	-	-
moderate		0	0	1	-	-	-	-	-
Heart									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	4	4	0	0	5
Cardiomyopathy		0	0	0	1	1	0	0	0
minimal		0	0	0	1	0	0	0	0
Intestine,duodenum									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Intestine,jejunum									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Intestine,ileum									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Intestine,cecum									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Intestine,colon									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Intestine,rectum									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		5	0	0	5	5	0	0	5
Kidney									
Number examined		5	0	0	5	5	0	0	5
Not remarkable		3	0	0	2	3	0	0	3
Regeneration,tubular		1	0	0	1	1	0	0	1
minimal		1	0	0	1	1	0	0	1
mild		0	0	0	1	0	0	0	0

- : Not applicable

Table 10-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Histopathological findings (End of administration period)

Organs Findings	Sex: Number:	M 0 7	M 100 12	M 300 12	M 1000 7	F 0 12	F 100 12	F 300 12	F 1000 12
Kidney (continued)									
Mineralization, papillary	1	0	0	0	1	0	0	0	1
minimal	1	0	0	0	1	0	0	0	1
Mineralization, cortical	0	0	0	1	0	0	0	0	0
minimal	0	0	0	1	0	0	0	0	0
Liver									
Number examined	5	0	0	5	5	0	0	0	5
Not remarkable	0	0	0	0	0	0	0	0	1
Vacuolation, hepatocyte, periportal	2	0	0	1	3	0	0	0	2
minimal	2	0	0	1	3	0	0	0	2
Hematopoiesis, extramedullary	0	0	0	0	2	0	0	0	0
minimal	0	0	0	0	2	0	0	0	0
Microgranuloma	5	0	0	5	3	0	0	0	3
minimal	5	0	0	5	2	0	0	0	3
mild	0	0	0	0	1	0	0	0	0
Lung(bronchus)									
Number examined	5	0	0	5	5	0	0	0	5
Not remarkable	4	0	0	3	1	0	0	0	4
Hemorrhage, alveolar	0	0	0	0	1	0	0	0	0
minimal	0	0	0	0	1	0	0	0	0
Appearance, alveolar macrophage	1	0	0	2	4	0	0	0	1
minimal	1	0	0	2	4	0	0	0	1
Lymph node,mesenteric									
Number examined	5	0	0	5	5	0	0	0	5
Not remarkable	5	0	0	5	5	0	0	0	5
Lymph node,submandibular									
Number examined	5	0	0	5	5	0	0	0	5
Not remarkable	5	0	0	5	5	0	0	0	5
Parathyroid									
Number examined	5	0	0	5	5	0	0	0	5
Not remarkable	5	0	0	5	5	0	0	0	5
Pituitary									
Number examined	5	0	0	5	5	0	0	0	5
Not remarkable	5	0	0	5	5	0	0	0	5
Sciatic nerve									
Number examined	5	0	0	5	5	0	0	0	5
Not remarkable	5	0	0	5	5	0	0	0	5
Seminal vesicle									
Number examined	5	0	0	5	-	-	-	-	-
Not remarkable	5	0	0	5	-	-	-	-	-
Spinal cord,thoracic									
Number examined	5	0	0	5	5	0	0	0	5
Not remarkable	5	0	0	5	5	0	0	0	5
Spleen									
Number examined	5	0	0	5	5	0	0	0	5
Not remarkable	1	0	0	2	0	0	0	0	1
Hematopoiesis, extramedullary	4	0	0	3	5	0	0	0	4
minimal	4	0	0	3	5	0	0	0	2
mild	0	0	0	0	2	0	0	0	2

- : Not applicable

Table 10-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Histopathological findings (End of administration period)

Organs Findings	Sex: Number:	M 0 7	M 100 12	M 300 12	M 1000 7	F 0 12	F 100 12	F 300 12	F 1000 12
Stomach									
Number examined	5	0	0	5	6	0	1	6	
Not remarkable	5	0	0	5	4	0	0	4	
Erosion,glandular stomach	0	0	0	0	2	0	1	2	
minimal	0	0	0	0	2	0	0	1	
mild	0	0	0	0	0	0	1	1	
Testis									
Number examined	5	0	1	5	-	-	-	-	
Not remarkable	5	0	0	5	-	-	-	-	
Atrophy,seminiferous tubular	0	0	1	0	-	-	-	-	
mild	0	0	1	0	-	-	-	-	
Thymus									
Number examined	5	0	0	5	5	0	0	5	
Not remarkable	5	0	0	5	5	0	0	5	
Thyroid									
Number examined	5	0	0	5	5	0	0	5	
Not remarkable	5	0	0	5	5	0	0	2	
Remnant,ultimobranchial body	0	0	0	0	0	0	0	3	
minimal	0	0	0	0	0	0	0	3	
Urinary bladder									
Number examined	5	0	0	5	5	0	0	5	
Not remarkable	5	0	0	5	5	0	0	5	
Uterus									
Number examined	-	-	-	-	5	0	0	5	
Not remarkable	-	-	-	-	5	0	0	5	

- : Not applicable

Table 10-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Histopathological findings (Recovery period)

Organs Findings	Sex: Dose(mg/kg/day): Number:	M 0 5	M 1000 5	F 0 5	F 1000 5
Liver					
	Number examined	0	0	0	1
	Hepatodiaphragmatic nodule mild	0	0	0	1
		0	0	0	1

Table 11

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Estrous cycle in female rats during the pre-mating period (Main group)

Dose mg/kg/day	No. of animals	Count of estrus					Mean duration of cycles Mean±S.D.
		0	1	2	3	4	
0	12	0	0	0	7	5	3.4±0.5
100	12	0	0	1	8	3	3.2±0.6
300	12	0	0	1	9	2	3.1±0.5
1000	12	0	0	0	4	8	3.7±0.5

No significant difference in any treated groups from control group.

Table 12

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Mating and fertility of animals

Dose mg/kg/day	No. of males	Male			Female			Fertility index (%) c)
		No. of copulated Mean \pm S.D.	Copulation index (%) a)	Insemination index (%) b)	No. of females	Days until copulation Mean \pm S.D.	Copulation index (%) a)	
0	12	2.6 \pm 1.1	12/12(100.0)	12/12(100.0)	12	2.6 \pm 1.1	12/12(100.0)	12/12(100.0)
100	12	2.1 \pm 0.9	12/12(100.0)	12/12(100.0)	12	2.1 \pm 0.9	12/12(100.0)	12/12(100.0)
300	12	2.3 \pm 1.2	12/12(100.0)	12/12(100.0)	12	2.3 \pm 1.2	12/12(100.0)	12/12(100.0)
1000	12	3.2 \pm 1.9	12/12(100.0)	12/12(100.0)	12	3.2 \pm 1.9	12/12(100.0)	12/12(100.0)

a): (No. of copulated animals / No. of mated animals) \times 100

b): (No. of males which inseminated females / No. of copulated males) \times 100

c): (No. of pregnant animals / No. of copulated females) \times 100

No significant difference in any treated groups from control group.

Table 13

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Delivery data on dams

Dose mg/kg/day		No. of pregnant females	No. of females with live pups	Delivery index % a)	Gestation period	No. of corpora lutea	No. of implan- tation sites	Implan- tation index % b)	No. of stillborn pups (%)c)	No. of liveborn pups	Live birth index % d)
0	Total	12	12	100.0	21.9 0.3	203	188	92.9	1 (0.6)	180	99.4
	Mean					16.9	15.7	4.1	(1.9)	15.0	1.9
	S.D.					1.8	1.4			1.5	
100	Total	12	12	100.0	21.8 0.4	204	189	93.0	1 (0.6)	170	99.4
	Mean					17.0	15.8	6.6	(2.0)	14.2	2.0
	S.D.					1.5	1.1			1.3	
300	Total	12	12	100.0	22.0 0.4	191	182	95.5	0 (0.0)	172	100.0
	Mean					15.9	15.2	4.5	(0.0)	14.3	0.0
	S.D.					2.2	1.9			2.1	
1000	Total	12	12	100.0	21.8 0.6	197	187	95.1	6 (3.6)	169	96.4
	Mean					16.4	15.6	4.1	(6.8)	14.1	6.8
	S.D.					1.5	1.2			1.6	

a): (No. of females which delivered live pups / No. of pregnant females) × 100

b): (No. of implantation sites / No. of corpora lutea) × 100

c): (No. of stillborn pups / No. of stillborn and liveborn pups) × 100

d): (No. of liveborn pups / No. of stillborn and liveborn pups) × 100

No significant difference in any treated groups from control group.

Table 14

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

External examination of liveborn pups

Dose mg/kg/daydams	No. of daydams	Total	No. of males	No. of females	Sex ratio a)	Body weight(g)		External b) abnor- malities(%)c)
			Male	Female		Male	Female	
0	12	Total	88	92	0.49	6.6	6.2	0
		Mean	7.3	7.7		0.4	0.4	(0.0)
		S.D.	2.3	2.8				(0.0)
100	12	Total	86	84	0.51	6.6	6.2	0
		Mean	7.2	7.0		0.4	0.4	(0.0)
		S.D.	1.2	1.3				(0.0)
300	12	Total	85	87	0.49	6.7	6.3	0
		Mean	7.1	7.3		0.5	0.4	(0.0)
		S.D.	1.7	2.1				(0.0)
1000	12	Total	75	94	0.44	6.6	6.2	0
		Mean	6.3	7.8		0.5	0.5	(0.0)
		S.D.	2.1	2.3				(0.0)

a): No. of males / No. of liveborn pups

b): No. of liveborn pups with external abnormalities

c): (No. of liveborn pups with external abnormalities / No. of liveborn pups) × 100

No significant difference in any treated groups from control group.

Table 15

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Viability index of pups

Dose mg/kg/day	No. of dams	No. of live pups		Viability index on day 4 after birth % a)	
		Day 0	Day 4		
0	Total	12	180	176	
	Mean		15.0	14.7	
	S.D.		1.5	1.7	
				97.7	
				4.5	
100	Total	12	170	170	
	Mean		14.2	14.2	
	S.D.		1.3	1.3	
				100.0	
				0.0	
300	Total	12	172	166	
	Mean		14.3	13.8	
	S.D.		2.1	1.5	
				97.0	
				5.4	
1000	Total	12	169	165	
	Mean		14.1	13.8	
	S.D.		1.6	2.0	
				97.6	
				8.3	

a): (No. of live pups on day 4 / No. of liveborn pups on day 0) × 100
No significant difference in any treated groups from control group.

Table 16

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Body weight of pups

Dose mg/kg/day	Male		Female	
	0	4	0	4a)
0	No.	12	12	12
0	Mean	6.6	9.8	6.2
0	S.D.	0.4	0.7	0.4
100	No.	12	12	12
100	Mean	6.6	10.2	6.2
100	S.D.	0.4	1.0	0.4
300	No.	12	12	12
300	Mean	6.7	10.4	6.3
300	S.D.	0.5	0.9	0.4
1000	No.	12	12	12
1000	Mean	6.6	10.0	6.2
1000	S.D.	0.5	1.3	0.5

Unit: g

No.: No. of dams

a): Day after birth

No significant difference in any treated groups from control group.

Table 17

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Gross pathological findings in pups on day 4 after birth

	Dose (mg/kg/day)	0	100	300	1000
Male					
No. of pups examined		86	86	83	72
No. of pups with abnormal findings		0	0	1	0
Thymic remnant in neck		0	0	1	0
Female					
No. of pups examined		90	84	83	93
No. of pups with abnormal findings		0	0	0	0

Appendix 1-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual clinical signs in male rats (Administration period)

Dose (mg/kg/day): 0

Animal number	Day of administration					
	1-7	8-14	15-21	22-28	29-35	36-42
1001	-	-	-	-	-	-
1002	-	-	-	-	-	-
1003	-	-	-	-	-	-
1004	-	-	-	-	-	-
1005	-	-	-	-	-	-
1006	-	-	-	-	-	-
1007	-	-	-	-	-	-
1008	-	-	-	-	-	-
1009	-	-	-	-	-	-
1010	-	-	-	-	-	-
1011	-	-	-	-	-	-
1012	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in male rats (Administration period)

Dose (mg/kg/day): 100

Animal number	Day of administration					
	1-7	8-14	15-21	22-28	29-35	36-42
2001	-	-	-	-	-	-
2002	-	-	-	-	-	-
2003	-	-	-	-	-	-
2004	-	-	-	-	-	-
2005	-	-	-	-	-	-
2006	-	-	-	-	-	-
2007	-	-	-	-	-	-
2008	-	-	-	-	-	-
2009	-	-	-	-	-	-
2010	-	-	-	-	-	-
2011	-	-	-	-	-	-
2012	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual clinical signs in male rats (Administration period)

Dose (mg/kg/day): 300

Animal number	Day of administration					
	1-7	8-14	15-21	22-28	29-35	36-42
3001	-	-	-	-	-	-
3002	-	-	-	-	-	-
3003	-	-	-	-	-	-
3004	-	-	-	-	-	-
3005	-	-	-	-	-	-
3006	-	-	-	-	-	-
3007	-	-	-	-	-	-
3008	-	-	-	-	-	-
3009	-	-	-	-	-	-
3010	-	-	-	-	-	-
3011	-	-	-	-	-	-
3012	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in male rats (Administration period)

Dose (mg/kg/day): 1000

Animal number	Day of administration					
	1-7	8-14	15-21	22-28	29-35	36-42
4001	-	-	-	-	-	-
4002	-	-	-	-	-	-
4003	-	-	-	-	-	-
4004	-	-	-	-	-	-
4005	-	-	-	-	-	-
4006	-	-	-	-	-	-
4007	-	-	-	-	-	-
4008	-	-	-	-	-	-
4009	-	-	-	-	-	-
4010	-	-	-	-	-	-
4011	-	-	-	-	-	-
4012	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual clinical signs in female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 0

Animal number	Day of administration														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 100

Animal number	Day of administration														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual clinical signs in female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 300

Animal number	Day of administration														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
3101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual clinical signs in female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 1000

Animal number	Day of administration														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
4101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-9

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in dams during the gestation period (Main group)

Dose (mg/kg/day): 0

Dam number	Administration																						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
1112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd

a): Day of gestation

-: No abnormal findings

sd: Spontaneous delivery

Appendix 1-10

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in dams during the gestation period (Main group)

Dose (mg/kg/day): 100

Dam number	Administration																						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
2101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
2112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd

a): Day of gestation

-: No abnormal findings

sd: Spontaneous delivery

Appendix 1-11

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in dams during the gestation period (Main group)

Dose (mg/kg/day): 300

Dam number	Administration																						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
3101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
3112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd

a): Day of gestation

-: No abnormal findings

sd: Spontaneous delivery

Appendix 1-12

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual clinical signs in dams during the gestation period (Main group)

Dose (mg/kg/day): 1000

Dam number	Administration																						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
4101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd
4112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	sd

a): Day of gestation

-: No abnormal findings

sd: Spontaneous delivery

Appendix 1-13

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in dams during the lactation period (Main group)

Dose (mg/kg/day): 0

Dam number	Administration				
	0	1	2	3	4a)
1101	-	-	-	-	-
1102	-	-	-	-	-
1103	-	-	-	-	-
1104	-	-	-	-	-
1105	-	-	-	-	-
1106	-	-	-	-	-
1107	-	-	-	-	-
1108	-	-	-	-	-
1109	-	-	-	-	-
1110	-	-	-	-	-
1111	-	-	-	-	-
1112	-	-	-	-	-

a): Day of lactation

-: No abnormal findings

Appendix 1-14

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual clinical signs in dams during the lactation period (Main group)

Dose (mg/kg/day): 100

Dam number	Administration				
	0	1	2	3	4a)
2101	-	-	-	-	-
2102	-	-	-	-	-
2103	-	-	-	-	-
2104	-	-	-	-	-
2105	-	-	-	-	-
2106	-	-	-	-	-
2107	-	-	-	-	-
2108	-	-	-	-	-
2109	-	-	-	-	-
2110	-	-	-	-	-
2111	-	-	-	-	-
2112	-	-	-	-	-

a): Day of lactation

-: No abnormal findings

Appendix 1-15

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in dams during the lactation period (Main group)

Dose (mg/kg/day): 300

Dam number	Administration				
	0	1	2	3	4a)
3101	-	-	-	-	-
3102	-	-	-	-	-
3103	-	-	-	-	-
3104	-	-	-	-	-
3105	-	-	-	-	-
3106	-	-	-	-	-
3107	-	-	-	-	-
3108	-	-	-	-	-
3109	-	-	-	-	-
3110	-	-	-	-	-
3111	-	-	-	-	-
3112	-	-	-	-	-

a): Day of lactation

-: No abnormal findings

Appendix 1-16

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in dams during the lactation period (Main group)

Dose (mg/kg/day): 1000

Dam number	Administration				
	0	1	2	3	4a)
4101	-	-	-	-	-
4102	-	-	-	-	-
4103	-	-	-	-	-
4104	-	-	-	-	-
4105	-	-	-	-	-
4106	-	-	-	-	-
4107	-	-	-	-	-
4108	-	-	-	-	-
4109	-	-	-	-	-
4110	-	-	-	-	-
4111	-	-	-	-	-
4112	-	-	-	-	-

a): Day of lactation

-: No abnormal findings

Appendix 1-17

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in female rats (Recovery group, administration period)

Dose (mg/kg/day): 0

Animal number	Day of administration					
	1-7	8-14	15-21	22-28	29-35	36-42
1113	-	-	-	-	-	-
1114	-	-	-	-	-	-
1115	-	-	-	-	-	-
1116	-	-	-	-	-	-
1117	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-18

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual clinical signs in female rats (Recovery group, administration period)

Dose (mg/kg/day): 1000

Animal number	Day of administration					
	1-7	8-14	15-21	22-28	29-35	36-42
4113	-	-	-	-	-	-
4114	-	-	-	-	-	-
4115	-	-	-	-	-	-
4116	-	-	-	-	-	-
4117	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-19

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in male rats (Recovery period)

Dose (mg/kg/day): 0

Animal number	Day of recovery													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1010	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1012	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-20

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual clinical signs in male rats (Recovery period)

Dose (mg/kg/day): 1000

Animal number	Day of recovery													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
4008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4010	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4012	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-21

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual clinical signs in female rats (Recovery period)

Dose (mg/kg/day): 0

Animal number	Day of recovery													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1113	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1114	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1115	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1116	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1117	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-: No abnormal findings

Appendix 1-22

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual clinical signs in female rats (Recovery period)

Dose (mg/kg/day): 1000

Animal number	Day of recovery													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
4113	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4114	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4115	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4116	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4117	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-: No abnormal findings

Appendix 2-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 1 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 1 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 1 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 1 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 2 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual detailed clinical signs in male rats: home cage observations
(Week 2 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in male rats: home cage observations
(Week 2 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 2 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-9

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual detailed clinical signs in male rats: home cage observations
(Week 3 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-10

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluorohexaneIndividual detailed clinical signs in male rats: home cage observations
(Week 3 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-11

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 3 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-12

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 3 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-13

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluorohexaneIndividual detailed clinical signs in male rats: home cage observations
(Week 4 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-14

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in male rats: home cage observations
(Week 4 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-15

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in male rats: home cage observations
(Week 4 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-16

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in male rats: home cage observations
(Week 4 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-17

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in male rats: home cage observations
(Week 5 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-18

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in male rats: home cage observations
(Week 5 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-19

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluorooctaneIndividual detailed clinical signs in male rats: home cage observations
(Week 5 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-20

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 5 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattend, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-21

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 6 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-22

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 6 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-23

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual detailed clinical signs in male rats: home cage observations
(Week 6 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-24

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in male rats: home cage observations
(Week 6 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-25

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Week 1 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-26

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Week 1 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-27

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Week 1 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-28

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Week 1 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-29

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluorohexaneIndividual detailed clinical signs in female rats: home cage observations
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-30

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-31

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-32

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattend, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-33

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluorohexaneIndividual detailed clinical signs in female rats: home cage observations
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-34

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-35

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-36

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluoroheptaneIndividual detailed clinical signs in female rats: home cage observations
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattend, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-37

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-38

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-39

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-40

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-41

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattend, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-42

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-43

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-44

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-45

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-46

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-47

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-48

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-49

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-50

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-51

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-52

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in female rats: home cage observations
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Posture a)	N	N	N	N	N	N	N	N	N	N	N	N
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-53

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 1 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-54

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 1 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-55

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluoroheptaneIndividual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 2 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-56

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 2 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattend, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-57

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorheptane

Individual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 3 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-58

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 3 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-59

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluoroheptaneIndividual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 4 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-60

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 4 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-61

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 5 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-62

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluoroheptaneIndividual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 5 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-63

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-64

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-65

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 1 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1008-1012)				
	8	9	10	11	12
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-66

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 1 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4008-4012)				
	8	9	10	11	12
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-67

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 2 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1008-1012)				
	8	9	10	11	12
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-68

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: home cage observations
(Week 2 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4008-4012)				
	8	9	10	11	12
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-69

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual detailed clinical signs in female rats: home cage observations
(Week 1 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-70

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluoroheptaneIndividual detailed clinical signs in female rats: home cage observations
(Week 1 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-71

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Week 2 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-72

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: home cage observations
(Week 2 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Posture a)	N	N	N	N	N
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0

a) N: Normal, F: Flattened, H: Hunched

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

Appendix 2-78

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 1 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	1	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	1	0	0	1	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-74

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 1 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	1	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-75

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 1 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	1	0	1	0	0	0	1	0	0	0	0	0
Reactivity to handling n)	1	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-76

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 1 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	1	0	1	1	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-77

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 2 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	1	0	0	0	0	0	1	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	1	0	0	0	0	0	1	1	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	1	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-78

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 2 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	1	1	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-79

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 2 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	1	0	0	0	0	0	0	0	1
Reactivity to handling n)	0	0	0	1	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-80

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 2 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	1	1	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-81

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluoroheptaneIndividual detailed clinical signs in male rats: in-the-hand observations
(Week 3 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	1	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	1	0	0	0	0	0	1	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-82

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 3 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	1	0	0	0	0	1	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-83

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 3 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	1	0	0	0	0	0	0	0	0	0	1	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	1	0	1	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-84

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 3 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	1	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-85

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 4 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	1	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-86

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 4 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	1	0	0	0
Reactivity to handling n)	0	0	0	0	1	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-87

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 4 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	1	0	0	1	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	1	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	1	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-88

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluoroheptaneIndividual detailed clinical signs in male rats: in-the-hand observations
(Week 4 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	1	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-89

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 5 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-90

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 5 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	1	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-91

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 5 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	1	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-92

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 5 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	1	1	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-93

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 6 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	1	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-94

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 6 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	1	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-95

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 6 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-96

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 6 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	1	0	1	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-97

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Week 1 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	1	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	1	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-98

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Week 1 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	1	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-99

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
 (Main group, Week 1 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	1	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-100

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
 (Main group, Week 1 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-101

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	1	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-102

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-103

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	1	0	1
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-104

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	1	0	1
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-105

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	1
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-106

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacration h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-107

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-108

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-109

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-110

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-111

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-112

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	1	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-113

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-114

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-115

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-116

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-117

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-118

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-119

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacration h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-120

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with PerfluoroheptaneIndividual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-121

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-122

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-123

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	0	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	0	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-124

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0	0	1	0	0	0	0	0
Fur condition b)	0	0	0	0	0	0	0	0	0	0	0	0
Skin c)	0	0	0	0	0	0	0	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0	0	0	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0	0	0	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0	0	0	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0	0	0	0	0	0	0	0
Lacrimation h)	0	0	0	0	0	0	0	0	0	0	0	0
Piloerection i)	0	0	0	0	0	0	0	0	0	0	0	0
Pupil size j)	0	0	0	0	0	0	0	0	0	0	0	0
Salivation k)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0	0	0	0	0	0	0	0
Vocalization m)	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0	0	1	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-125

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 1 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-126

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 1 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-127

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 2 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-128

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 2 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	1
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-129

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 3 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-130

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 3 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-131

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 4 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-132

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 4 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-133

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 5 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-134

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 5 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	1
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-135

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-136

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	1	1
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-137

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 1 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1008-1012)				
	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-138

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 1 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4008-4012)				
	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-139

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 2 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1008-1012)				
	8	9	10	11	12
Ease of removal from cage a)	0	0	0	1	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	1	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-140

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: in-the-hand observations
(Week 2 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4008-4012)				
	8	9	10	11	12
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-141

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Week 1 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-142

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Week 1 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-143

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Week 2 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	0	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-144

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: in-the-hand observations
(Week 2 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Ease of removal from cage a)	0	0	0	0	0
Fur condition b)	0	0	0	0	0
Skin c)	0	0	0	0	0
Secretions-Eye, Nose d)	0	0	0	0	0
Exophthalmos e)	0	0	0	0	0
Palpebral closure f)	0	0	0	0	0
Mucosal membranes g)	0	0	0	0	0
Lacrimation h)	0	0	0	0	0
Piloerection i)	0	0	0	0	0
Pupil size j)	0	0	0	0	0
Salivation k)	0	0	0	0	0
Abnormal respiration l)	0	0	0	0	0
Vocalization m)	1	0	0	0	0
Reactivity to handling n)	0	0	0	0	0

a) -1: Atypically docile, 0: Easy, 1: Some resistance/avoidance, 2: Difficult, 3: Very difficult

b) 0: Normal, 1: Slight, unkempt fur, 2: Moderate, 3: Marked

c) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

d) 0: Absent, 1: Present

e) 0: Absent, 1: Present

f) 0: Normal, 1: Slightly closed, 2: Half closed, 3: Completely closed

g) 0: Normal, 1: Slight, 2: Moderate, 3: Marked

h) 0: Normal, 1: Present

i) 0: Absent, 1: Present

j) -1: Miosis, 0: Normal, 1: Half opened pupil, 2: Mydriasis

k) 0: None, 1: Slight, 2: Moderate, 3: Marked

l) 0: Absent, 1: Slight, 2: Moderate, 3: Marked

m) 0: None, 1: Soft, 2: Moderate, 3: Loud/aggressive

n) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 2-145

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 1 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	4	4	3	5	6	5	3	3	4	5	1	3
Defecation count	0	0	0	0	0	0	0	0	0	0	0	1
Urination h)	0	2	0	0	0	0	0	0	0	0	0	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-146

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 1 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	5	3	7	3	2	8	6	1	6	4	1	2
Defecation count	0	0	0	1	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	1	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-147

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 1 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	10	7	1	6	3	6	5	5	2	4	4	4
Defecation count	0	0	1	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	1	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-148

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 1 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	5	10	3	6	7	3	5	7	7	6	7
Defecation count	0	1	1	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	1	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-149

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 2 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	5	6	2	1	7	5	1	4	3	7	5	2
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	1	0	0	0	1	1	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-150

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 2 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	5	3	4	5	2	7	4	2	7	6	0	3
Defecation count	0	0	0	0	0	0	0	0	0	0	1	0
Urination h)	0	0	0	1	0	0	0	0	1	0	1	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-151

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 2 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	7	4	4	7	7	3	6	5	4	5	7
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	1	1	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-152

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 2 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	4	1	4	4	6	5	3	6	3	4	5	3
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	1	0	1	0	1	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-153

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 3 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	3	8	6	3	5	7	3	1	4	3	2	4
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	1	0	0	0	1	1	1	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-154

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 3 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	5	4	1	2	2	8	5	0	6	5	5	3
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	1	0	

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-155

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 3 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	7	6	5	5	4	6	2	6	2	2	7	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	1	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-156

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 3 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	6	2	1	4	7	3	3	7	4	4	4	4
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	1	0	0	0	0	1	1	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-157

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 4 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	5	6	3	5	7	5	3	6	3	5	5	4
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	1	1	0	0	1	1	0	0	0	0	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-158

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 4 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	7	6	2	6	2	8	4	0	5	6	2	3
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	1	0	0	1	0	1	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-159

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 4 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	7	8	5	5	5	7	2	5	3	5	8	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	1	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-160

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 4 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	4	5	6	5	7	6	4	6	8	5	5	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	1	0	0	0	1	1	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-161

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 5 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	4	5	6	2	4	4	5	7	5	5	6	4
Defecation count	0	0	0	0	0	0	0	0	0	1	0	0
Urination h)	0	1	1	0	0	0	1	0	0	0	0	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-162

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual detailed clinical signs in male rats: open field observation
(Week 5 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	3	4	6	4	6	5	2	4	9	4	4
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	1	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-163

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual detailed clinical signs in male rats: open field observation
(Week 5 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	6	4	8	5	5	9	2	7	2	1	7	4
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	1	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-164

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 5 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	6	3	9	5	10	7	6	6	5	3	4	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	1	0	0	0	0	1	1	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-165

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 6 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1001-1012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	1	6	4	4	5	3	4	8	5	6	9	6
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	1	0	0	0	0	0	0	0	0	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-166

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 6 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	9	5	5	4	6	7	3	4	4	5	4	4
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	1	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-167

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual detailed clinical signs in male rats: open field observation
(Week 6 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	8	9	9	5	6	1	5	0	1	5	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	1	0	0	0	0	1	0	0	1	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-168

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 6 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4001-4012)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	4	3	2	5	8	6	5	8	9	5	5	6
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	1	0	0	0	1	3	1	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattend, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-169

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Week 1 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	4	9	6	9	8	8	5	5	7	12	6	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-170

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Week 1 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	7	3	12	11	8	9	7	6	6	8	9	4
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-171

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Week 1 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	11	8	10	4	11	9	7	5	10	6	6	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-172

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Week 1 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	13	12	6	9	9	8	6	8	6	9	9	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-173

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	1	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	9	10	12	9	9	10	6	10	10	9	9	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	1	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-174

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
 (Main group, Week 2 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	9	7	9	7	12	6	7	8	7	7	12	8
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-175

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	10	8	11	4	10	9	13	6	10	8	9	10
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	1	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-176

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Week 2 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	13	14	6	7	8	10	8	11	8	5	11	4
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-177

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	7	9	7	10	6	8	3	8	5	9	8	2
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-178

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
 (Main group, Day 1 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	6	11	11	8	7	11	7	6	8	12	8
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-179

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	8	11	4	8	9	7	4	10	6	10	8
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-180

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 1 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	11	8	6	10	10	8	10	6	7	10	6
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-181

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	10	8	8	11	5	10	7	10	7	10	6	6
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-182

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	10	8	9	5	7	10	9	7	7	11	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-183

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	13	8	8	6	6	10	7	5	7	5	9	7
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-184

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 7 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	11	12	10	8	11	10	7	5	8	5	8	6
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-185

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	7	7	6	8	6	10	12	8	6	6	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-186

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	5	6	14	8	6	8	6	9	7	10	11	5
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-187

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	10	10	10	3	7	7	10	4	9	4	6	6
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-188

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 14 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	8	7	6	7	7	4	4	5	7	6	7
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-189

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual detailed clinical signs in female rats: open field observation
 (Main group, Day 20 of gestation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	6	5	7	7	8	8	7	6	7	8	4	4
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-190

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	6	5	9	6	5	5	8	9	5	7	8	6
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-191

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	8	6	7	7	8	8	8	3	10	6	5	8
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-192

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 20 of gestation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	10	4	7	8	7	8	4	7	7	5	8	6
Defecation count	0	0	0	0	0	0	0	1	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-193

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	5	10	10	8	9	10	9	7	9	10	8	7
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-194

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	6	8	11	8	7	6	7	9	6	8	10	7
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-195

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	0	0	0	0	0
Rearing	10	7	7	4	7	10	9	5	8	5	8	4
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-196

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Main group, Day 4 of lactation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4112)											
	1	2	3	4	5	6	7	8	9	10	11	12
Arousal a)	0	0	0	0	0	0	0	0	0	0	0	0
Convulsion b)	0	0	0	0	0	0	0	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0	0	0	0	0	0	0	0
Stereotypy d)	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)	0	0	0	0	0	0	0	0	0	0	0	0
Posture f)	N	N	N	N	N	N	N	N	N	N	N	N
Grooming g)	0	0	0	0	0	0	0	1	0	0	0	0
Rearing	9	9	8	5	6	10	5	5	8	9	10	7
Defecation count	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)	0	0	0	0	0	0	0	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-197

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 1 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	6	7	11	8	7
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-198

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 1 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	8	6	8	7	9
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-199

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 2 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	7	9	7	12	5
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-200

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 2 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	11	10	11	8	9
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-201

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 3 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	6	10	6	9	8
Defecation count	0	0	0	0	0
Urination h)	0	0	1	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-202

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 3 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	9	6	10	9	8
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-203

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 4 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	7	10	10	9	11
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-204

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 4 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	10	10	8	9	5
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-205

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 5 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	7	7	8	10	14
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-206

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 5 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	9	8	12	9	7
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-207

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	5	15	11	16	13
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-208

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	10	9	9	11	1
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-209

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 1 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1008-1012)				
	8	9	10	11	12
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	3	3	5	8	3
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-210

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 1 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4008-4012)				
	8	9	10	11	12
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	7	6	3	4	3
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-211

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in male rats: open field observation
(Week 2 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1008-1012)				
	8	9	10	11	12
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	3	4	4	8	5
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	1

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-212

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual detailed clinical signs in male rats: open field observation
(Week 2 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4008-4012)				
	8	9	10	11	12
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	9	7	6	5	7
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-213

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual detailed clinical signs in female rats: open field observation
(Week 1 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	10	9	8	11	12
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-214

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual detailed clinical signs in female rats: open field observation
(Week 1 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	9	10	8	8	7
Defecation count	0	0	0	0	0
Urination h)	0	0	1	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-215

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual detailed clinical signs in female rats: open field observation
(Week 2 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	7	8	6	9	10
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-216

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual detailed clinical signs in female rats: open field observation
(Week 2 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Arousal a)	0	0	0	0	0
Convulsion b)	0	0	0	0	0
Abnormal behavior c)	0	0	0	0	0
Stereotypy d)	0	0	0	0	0
Gait e)	0	0	0	0	0
Posture f)	N	N	N	N	N
Grooming g)	0	0	0	0	0
Rearing	8	5	8	9	10
Defecation count	0	0	0	0	0
Urination h)	0	0	0	0	0

a) -2: Unconscious/semi-conscious, -1: Reduced awareness, 0: Normal, 1: Increased alertness, 2: Markedly alert

b) 0: None, 1: Minor, 2: Moderate, 3: Severe

c) 0: None, 1: Minor, 2: Moderate, 3: Severe

d) 0: None, 1: Minor, 2: Moderate, 3: Severe

e) U: No/minimal location, 0: Normal, 1: Slight, 2: Moderate, 3: Markedly

f) N: Normal, F: Flattened, H: Hunched

g) 0: None, 1: Occasional bouts (up to four), 2: Numerous bouts (more than five)

h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 2-217

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of male rats (Week 6 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1008-1012)				
	8	9	10	11	12
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	74	110	70	51	106

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-218

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of male rats (Week 6 of administration)

Dose (mg/kg/day) : 100

Parameter	Animal number (2001-2005)				
	1	2	3	4	5
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	64	70	78	51	70

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-219

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of male rats (Week 6 of administration)

Dose (mg/kg/day) : 300

Parameter	Animal number (3001-3005)				
	1	2	3	4	5
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	93	84	109	70	99

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-220

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of male rats (Week 6 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4008-4012)				
	8	9	10	11	12
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	75	76	58	101	80

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both,-F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-221

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 0

Parameter	Animal number (1101-1111)				
	1	2	4	7	11
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	38	50	59	55	73

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-222

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 100

Parameter	Animal number (2101-2109)				
	1	2	3	7	9
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	46	44	60	73	56

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-223

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual manipulative test of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 300

Parameter	Animal number (3101-3106)				
	1	2	3	4	6
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	62	45	63	77	80

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-224

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4101-4110)				
	1	2	3	6	10
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	43	28	33	43	55

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-225

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual manipulative test of female rats (Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	98	39	66	73	55

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-226

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of female rats (Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	74	44	60	93	102

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-227

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of male rats (Week 2 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1008-1012)				
	8	9	10	11	12
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	70	125	110	105	91

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-228

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of male rats (Week 2 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4008-4012)				
	8	9	10	11	12
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	78	81	125	133	95

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-229

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of female rats (Week 2 of recovery)

Dose (mg/kg/day) : 0

Parameter	Animal number (1113-1117)				
	13	14	15	16	17
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	94	52	80	95	76

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-230

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual manipulative test of female rats (Week 2 of recovery)

Dose (mg/kg/day) : 1000

Parameter	Animal number (4113-4117)				
	13	14	15	16	17
Auditory response a)	0	0	0	0	0
Approach response b)	0	0	0	0	0
Touch response c)	0	0	0	0	0
Tail pinch response d)	0	0	0	0	0
Pupillary reflex e)	P	P	P	P	P
Aerial righting reflex (Total score)	0	0	0	0	0
Landing foot splay (mm)	62	59	80	80	110

a) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

b) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

c) -1: No reaction/ignores, 0: Normal, 1: Abnormality fearful/aggressive reaction

d) -2: None, -1: Weak, 0: Normal, 1: Exaggerate

e) P: Pass, both, F: Failed, neither, L: Left pupil responds, R: Right pupil responds

Appendix 2-231

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual grip strength of male rats (Week 6 of administration)

Dose (mg/kg/day) : 0

Animal number	Fore limb g	Hind limb g
1008	1050	770
1009	1251	755
1010	1431	994
1011	1006	699
1012	1054	667
Mean	1158	777
S.D.	179	128

Appendix 2-232

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of male rats (Week 6 of administration)

Dose (mg/kg/day) : 100

Animal number	Fore limb g	Hind limb g
2001	880	683
2002	1011	618
2003	981	749
2004	1125	859
2005	1410	847
Mean	1081	751
S.D.	203	104

Appendix 2-233

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of male rats (Week 6 of administration)

Dose (mg/kg/day) : 300

Animal number	Fore limb g	Hind limb g
3001	1645	572
3002	1380	824
3003	1101	654
3004	1459	772
3005	1183	694
Mean	1354	703
S.D.	218	99

Appendix 2-234

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of male rats (Week 6 of administration)

Dose (mg/kg/day) : 1000

Animal number	Fore limb g	Hind limb g
4008	1353	740
4009	1210	842
4010	1001	679
4011	970	767
4012	1221	822
Mean	1151	770
S.D.	162	65

Appendix 2-235

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 0

Animal number	Fore limb g	Hind limb g
1101	1266	546
1102	1242	471
1104	1370	659
1107	748	657
1111	975	717
Mean	1120	610
S.D.	254	99

Appendix 2-236

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 100

Animal number	Fore limb g	Hind limb g
2101	965	847
2102	1162	428
2103	952	854
2107	1392	997
2109	1047	782
Mean	1104	782
S.D.	182	213

Appendix 2-237

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 300

Animal number	Fore limb g	Hind limb g
3101	1070	417
3102	1414	873
3103	1224	713
3104	1207	832
3106	1439	394
Mean	1271	646
S.D.	154	227

Appendix 2-238

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 1000

Animal number	Fore limb g	Hind limb g
4101	1152	555
4102	1057	570
4103	1136	499
4106	1331	488
4110	847	678
Mean	1105	558
S.D.	175	76

Appendix 2-239

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of female rats (Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 0

Animal number	Fore limb g	Hind limb g
1113	1180	525
1114	1034	579
1115	983	519
1116	793	714
1117	840	726
Mean	966	613
S.D.	155	101

Appendix 2-240

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of female rats (Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 1000

Animal number	Fore limb g	Hind limb g
4113	1093	792
4114	949	664
4115	1057	671
4116	1163	715
4117	1217	787
Mean	1096	726
S.D.	103	61

Appendix 2-241

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of male rats (Week 2 of recovery)

Dose (mg/kg/day) : 0

Animal number	Fore limb g	Hind limb g
1008	1830	806
1009	1189	882
1010	1729	1123
1011	1469	947
1012	1364	752
Mean	1516	902
S.D.	263	144

Appendix 2-242

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of male rats (Week 2 of recovery)

Dose (mg/kg/day) : 1000

Animal number	Fore limb g	Hind limb g
4008	1597	749
4009	1815	1011
4010	1520	822
4011	1289	1078
4012	1777	1248
Mean	1600	982
S.D.	213	200

Appendix 2-243

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of female rats (Week 2 of recovery)

Dose (mg/kg/day) : 0

Animal number	Fore limb g	Hind limb g
1113	969	756
1114	936	651
1115	1333	811
1116	1120	983
1117	850	868
Mean	1042	814
S.D.	190	124

Appendix 2-244

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual grip strength of female rats (Week 2 of recovery)

Dose (mg/kg/day) : 1000

Animal number	Fore limb g	Hind limb g
4113	1706	1142
4114	1119	636
4115	1045	636
4116	1313	1074
4117	1643	939
Mean	1365	885
S.D.	300	239

Appendix 2-245

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of male rats (Week 6 of administration)

Dose (mg/kg/day) : 0

Animal number	Interval (minutes)						Total(0-60)
	0-10	10-20	20-30	30-40	40-50	50-60	
1008	393	300	183	76	35	24	1011
1009	389	393	301	296	239	182	1800
1010	401	346	316	320	301	182	1866
1011	438	319	161	138	96	63	1215
1012	375	340	326	303	200	183	1727
Mean	399	340	257	227	174	127	1524
S.D.	24	35	79	112	108	77	385

Appendix 2-246

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of male rats (Week 6 of administration)

Dose (mg/kg/day) : 100

Animal number	Interval (minutes)						Total(0-60)
	0-10	10-20	20-30	30-40	40-50	50-60	
2001	385	356	107	263	55	19	1185
2002	389	299	294	208	220	189	1599
2003	335	256	241	181	70	260	1343
2004	326	369	389	311	307	353	2055
2005	385	307	189	200	246	31	1358
Mean	364	317	244	233	180	170	1508
S.D.	31	46	106	53	112	145	340

Appendix 2-247

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual motor activity of male rats (Week 6 of administration)

Dose (mg/kg/day) : 300

Animal number	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
3001	401	382	347	292	124	143	1689
3002	294	193	295	246	264	0	1292
3003	388	325	336	240	73	87	1449
3004	348	275	130	294	155	114	1311
3005	450	367	273	201	270	40	1601
Mean	375	308	276	255	177	77	1468
S.D.	59	77	87	39	87	57	175

Appendix 2-248

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of male rats (Week 6 of administration)

Dose (mg/kg/day) : 1000

Animal number	Interval (minutes)						Total(0-60)
	0-10	10-20	20-30	30-40	40-50	50-60	
4008	352	229	93	113	11	28	826
4009	389	309	289	343	351	273	1954
4010	400	298	287	111	25	22	1143
4011	377	308	204	90	13	10	1002
4012	408	369	351	139	326	291	1884
Mean	385	303	245	159	145	125	1362
S.D.	22	50	100	104	177	144	521

Appendix 2-249

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 0

Animal number	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
1101	231	113	128	46	39	3	560
1102	356	123	15	79	18	3	594
1104	373	234	116	209	34	40	1006
1107	62	15	38	101	115	3	334
1111	343	185	93	49	20	11	701
Mean	273	134	78	97	45	12	639
S.D.	130	83	49	67	40	16	245

Appendix 2-250

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 100

Animal number	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
2101	293	298	88	12	37	13	741
2102	309	198	110	80	35	14	746
2103	322	115	84	36	24	114	695
2107	257	179	101	36	17	7	597
2109	280	150	72	16	16	12	546
Mean	292	188	91	36	26	32	665
S.D.	25	69	15	27	10	46	89

Appendix 2-251

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 300

Animal number	Interval (minutes)						Total(0-60)
	0-10	10-20	20-30	30-40	40-50	50-60	
3101	348	53	14	68	24	16	523
3102	319	255	262	138	14	11	999
3103	432	350	363	211	231	202	1789
3104	212	49	26	20	101	238	646
3106	229	170	230	184	172	154	1139
Mean	308	175	179	124	108	124	1019
S.D.	90	130	153	80	94	105	498

Appendix 2-252

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of female rats (Main group, Day 4 of lactation)

Dose (mg/kg/day) : 1000

Animal number	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
4101	403	123	130	46	51	207	960
4102	293	173	106	11	8	14	605
4103	307	275	36	16	5	48	687
4106	206	106	39	28	2	67	448
4110	278	320	90	85	34	25	832
Mean	297	199	80	37	20	72	706
S.D.	71	94	42	30	22	78	198

Appendix 2-253

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of female rats (Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 0

Animal number	Interval (minutes)						Total(0-60)
	0-10	10-20	20-30	30-40	40-50	50-60	
1113	441	324	295	219	261	62	1602
1114	456	256	54	78	284	13	1141
1115	478	314	391	111	32	0	1326
1116	496	367	344	310	261	274	2052
1117	436	331	286	220	9	25	1307
Mean	461	318	274	188	169	75	1486
S.D.	25	40	130	93	136	114	357

Appendix 2-254

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of female rats (Recovery group, Week 6 of administration)

Dose (mg/kg/day) : 1000

Animal number	Interval (minutes)						Total(0-60)
	0-10	10-20	20-30	30-40	40-50	50-60	
4113	453	436	262	343	108	15	1617
4114	405	360	333	311	269	83	1761
4115	498	360	437	229	5	3	1532
4116	405	300	288	163	253	21	1430
4117	425	402	353	528	342	529	2579
Mean	437	372	335	315	195	130	1784
S.D.	39	51	68	138	136	225	461

Appendix 2-255

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual motor activity of male rats (Week 2 of recovery)

Dose (mg/kg/day) : 0

Animal number	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
1008	391	362	274	271	274	336	1908
1009	401	309	192	245	272	95	1514
1010	379	352	285	253	234	200	1703
1011	426	293	308	287	91	304	1709
1012	338	299	339	296	317	250	1839
Mean	387	323	280	270	238	237	1735
S.D.	32	32	55	22	87	95	151

Appendix 2-256

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of male rats (Week 2 of recovery)

Dose (mg/kg/day) : 1000

Animal number	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
4008	311	325	80	46	30	4	796
4009	318	315	181	310	374	272	1770
4010	396	280	35	13	26	199	949
4011	415	395	311	216	282	351	1970
4012	291	224	322	97	45	9	988
Mean	346	308	186	136	151	167	1295
S.D.	55	63	131	124	165	156	535

Appendix 2-257

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual motor activity of female rats (Week 2 of recovery)

Dose (mg/kg/day) : 0

Animal number	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
1113	351	257	256	299	246	205	1614
1114	210	123	112	52	50	164	711
1115	362	253	213	263	78	130	1299
1116	384	341	294	316	235	290	1860
1117	450	290	255	279	214	269	1757
Mean	351	253	226	242	165	212	1448
S.D.	88	81	70	108	93	68	463

Appendix 2-258

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual motor activity of female rats (Week 2 of recovery)

Dose (mg/kg/day) : 1000

Animal number	Interval (minutes)						
	0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
4113	339	374	324	239	330	246	1852
4114	323	169	146	181	140	154	1113
4115	367	272	277	214	282	225	1637
4116	289	132	137	294	164	137	1153
4117	376	361	380	179	237	337	1870
Mean	339	262	253	221	231	220	1525
S.D.	35	110	108	48	79	80	370

Appendix 3-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual body weight of male rats (Administration period)

Dose (mg/kg/day): 0

Animal number	Day of administration												Gain 1-42	
	1	4	8	11	15	18	22	25	29	32	36	39		
1001	349	365	382	396	412	419	433	447	460	471	491	504	509	160
1002	371	396	413	428	442	442	453	467	483	502	509	521	518	147
1003	365	377	394	404	426	417	440	448	464	466	485	494	495	130
1004	366	380	391	406	410	417	424	425	436	447	457	462	468	102
1005	381	388	404	424	441	450	464	475	489	509	516	528	545	164
1006	351	362	385	399	415	426	439	448	455	459	469	471	487	136
1007	374	391	402	414	420	432	445	460	473	477	480	483	487	113
1008	362	373	386	400	411	408	428	432	449	458	471	474	479	117
1009	371	381	395	411	428	433	448	459	475	483	498	511	506	135
1010	379	397	418	436	453	457	475	485	504	508	520	531	537	158
1011	339	345	348	354	358	370	363	368	374	378	389	393	408	69
1012	357	366	371	388	404	417	428	439	455	466	480	493	498	141
Mean	363.8	376.8	390.8	405.0	418.3	424.0	436.7	446.1	459.8	468.7	480.4	488.8	494.8	131.0
S.D.	12.8	15.5	18.9	21.3	24.2	22.5	27.7	30.1	32.8	35.0	34.7	37.6	35.4	27.4

Unit: g

Appendix 3-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual body weight of male rats (Administration period)

Dose (mg/kg/day): 100

Animal number	Day of administration												Gain 1-42	
	1	4	8	11	15	18	22	25	29	32	36	39		
2001	357	363	379	391	408	421	439	450	468	477	495	491	507	150
2002	374	391	408	416	430	435	452	461	474	483	498	500	509	135
2003	351	362	373	378	389	402	420	431	441	451	459	470	477	126
2004	350	366	383	397	415	422	433	445	451	463	475	481	486	136
2005	355	368	377	388	402	400	422	430	436	445	457	469	466	111
2006	385	401	424	444	460	434	477	490	520	529	544	545	556	171
2007	365	381	394	412	416	425	429	438	449	458	467	478	482	117
2008	348	360	372	375	392	399	412	422	435	440	455	469	462	114
2009	375	392	410	427	437	442	453	461	468	474	489	492	495	120
2010	374	386	399	412	423	435	450	459	472	478	491	500	511	137
2011	363	373	387	400	413	421	439	443	453	463	476	485	490	127
2012	375	385	411	430	448	447	469	479	493	502	512	515	521	146
Mean	364.3	377.3	393.1	405.8	419.4	423.6	441.3	450.8	463.3	471.9	484.8	491.3	496.8	132.5
S.D.	12.2	13.8	17.2	21.4	21.5	16.2	19.7	20.3	24.9	25.0	25.9	22.1	26.1	17.3

Unit: g

Appendix 3-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual body weight of male rats (Administration period)

Dose (mg/kg/day): 300

Animal number	Day of administration												Gain 1-42	
	1	4	8	11	15	18	22	25	29	32	36	39		
3001	339	347	366	367	379	390	397	404	409	420	429	435	442	103
3002	369	375	394	409	430	434	451	466	487	497	507	517	514	145
3003	351	366	370	380	388	395	401	418	429	435	439	445	446	95
3004	354	373	391	408	412	418	437	445	460	465	480	485	486	132
3005	349	360	378	393	403	410	435	443	453	462	480	499	503	154
3006	368	386	396	406	421	427	444	453	463	466	485	493	499	131
3007	351	364	382	398	421	431	452	472	489	507	519	538	542	191
3008	366	380	401	411	423	437	451	465	471	485	488	498	499	133
3009	370	391	402	416	431	432	445	456	467	479	488	501	500	130
3010	375	387	402	420	428	435	451	462	477	480	497	508	513	138
3011	347	354	370	378	392	398	411	413	426	432	444	450	449	102
3012	359	380	387	392	403	413	416	429	436	445	458	469	469	110
Mean	358.2	371.9	386.6	398.2	410.9	418.3	432.6	443.8	455.6	464.4	476.2	486.5	488.5	130.3
S.D.	11.3	13.9	13.2	16.5	17.7	16.9	20.7	22.8	25.5	27.0	27.9	31.0	31.0	26.5

Unit: g

Appendix 3-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual body weight of male rats (Administration period)

Dose (mg/kg/day): 1000

Animal number	Day of administration												Gain 1-42	
	1	4	8	11	15	18	22	25	29	32	36	39		
4001	347	363	382	396	405	409	437	451	463	476	488	501	504	157
4002	347	355	367	370	377	391	402	410	430	436	455	458	467	120
4003	372	391	401	418	437	449	470	479	499	507	522	525	538	166
4004	365	381	390	398	417	400	423	437	449	457	467	463	472	107
4005	348	367	389	400	411	419	432	445	454	468	478	484	504	156
4006	366	381	394	409	414	425	452	458	478	487	500	516	526	160
4007	379	390	409	424	437	442	468	470	491	495	514	521	532	153
4008	350	365	385	401	418	422	437	448	467	480	491	499	506	156
4009	355	375	387	398	412	417	430	436	445	455	476	468	477	122
4010	381	394	411	425	443	446	459	465	481	485	496	506	511	130
4011	373	393	408	421	435	449	458	471	487	497	511	527	533	160
4012	334	362	375	387	398	407	413	414	427	438	451	456	468	134
Mean	359.8	376.4	391.5	403.9	417.0	423.0	440.1	448.7	464.3	473.4	487.4	493.7	503.2	143.4
S.D.	14.9	13.8	13.8	16.4	19.0	19.8	21.7	21.8	23.7	23.0	22.8	26.9	26.5	19.7

Unit: g

Appendix 3-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual body weight of female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 0

Animal number	Day of administration					Gain 1-15
	1	4	8	11	15	
1101	244	255	271	274	282	38
1102	220	233	241	245	254	34
1103	235	240	251	253	261	26
1104	226	242	247	256	259	33
1105	242	246	256	252	257	15
1106	252	255	267	261	274	22
1107	236	245	256	258	266	30
1108	237	244	253	255	263	26
1109	243	241	261	269	274	31
1110	242	254	259	264	266	24
1111	233	235	241	253	258	25
1112	214	225	238	243	255	41
Mean	235.3	242.9	253.4	256.9	264.1	28.8
S.D.	10.8	9.2	10.4	9.0	8.7	7.2

Unit: g

Appendix 3-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual body weight of female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 100

Animal number	Day of administration					Gain 1-15
	1	4	8	11	15	
2101	241	258	271	265	282	41
2102	238	248	256	257	266	28
2103	242	245	257	271	279	37
2104	227	240	246	249	261	34
2105	216	225	230	236	238	22
2106	238	240	250	248	256	18
2107	223	237	251	254	265	42
2108	223	228	234	227	239	16
2109	255	255	265	283	287	32
2110	237	247	260	264	275	38
2111	252	261	270	273	279	27
2112	232	242	251	259	264	32
Mean	235.3	243.8	253.4	257.2	265.9	30.6
S.D.	11.7	11.0	12.7	15.8	15.8	8.6

Unit: g

Appendix 3-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual body weight of female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 300

Animal number	Day of administration					Gain 1-15
	1	4	8	11	15	
3101	231	235	241	254	265	34
3102	248	253	261	262	271	23
3103	220	230	235	231	242	22
3104	255	260	275	286	294	39
3105	230	238	242	250	253	23
3106	241	245	259	262	273	32
3107	226	246	256	264	276	50
3108	226	242	250	256	265	39
3109	247	244	260	265	278	31
3110	238	241	254	251	260	22
3111	226	234	243	247	255	29
3112	240	251	261	267	277	37
Mean	235.7	243.3	253.1	257.9	267.4	31.8
S.D.	10.8	8.6	11.3	13.4	13.8	8.6

Unit: g

Appendix 3-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual body weight of female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 1000

Animal number	Day of administration					Gain 1-15
	1	4	8	11	15	
4101	239	250	260	262	270	31
4102	221	233	247	246	256	35
4103	245	239	252	266	272	27
4104	229	232	243	242	249	20
4105	234	240	249	251	243	9
4106	234	250	254	255	262	28
4107	236	244	252	255	263	27
4108	237	241	252	245	255	18
4109	231	243	252	256	266	35
4110	228	228	242	250	262	34
4111	219	225	236	237	241	22
4112	261	269	278	273	279	18
Mean	234.5	241.2	251.4	253.2	259.8	25.3
S.D.	11.1	11.8	10.5	10.3	11.6	8.1

Unit: g

Appendix 3-9

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual body weight of dams during the gestation period (Main group)

Dose (mg/kg/day): 0

Dam number	Administration						Gain 0-20	
	0	4	7	11	14	17		
1101	282	316	325	348	365	387	442	160
1102	256	278	291	301	320	348	404	148
1103	263	281	284	309	322	350	408	145
1104	263	293	302	325	335	359	412	149
1105	274	300	307	326	332	357	408	134
1106	290	313	321	340	358	392	440	150
1107	272	292	299	319	338	374	416	144
1108	260	278	284	303	313	347	396	136
1109	288	302	311	338	356	395	444	156
1110	276	301	310	330	342	372	421	145
1111	261	278	289	307	328	355	402	141
1112	255	275	286	305	320	348	394	139
Mean	270.0	292.3	300.8	320.9	335.8	365.3	415.6	145.6
S.D.	12.2	14.3	14.3	16.0	16.7	18.0	17.7	7.7

Unit: g

a): Day of gestation

Appendix 3-10

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual body weight of dams during the gestation period (Main group)

Dose (mg/kg/day): 100

Dam number	Administration							Gain 0-20
	0	4	7	11	14	17	20a)	
2101	280	302	315	335	351	377	428	148
2102	262	296	299	319	332	361	414	152
2103	283	305	315	336	350	375	414	131
2104	259	285	293	311	323	351	398	139
2105	242	263	272	299	314	342	393	151
2106	269	291	305	325	340	362	409	140
2107	268	288	296	325	338	371	429	161
2108	248	262	273	290	304	328	369	121
2109	283	316	331	359	376	416	478	195
2110	280	298	313	341	351	384	437	157
2111	287	310	317	345	362	396	443	156
2112	266	289	307	329	345	378	428	162
Mean	268.9	292.1	303.0	326.2	340.5	370.1	420.0	151.1
S.D.	14.4	16.6	17.6	19.5	20.2	23.7	27.6	18.6

Unit: g

a): Day of gestation

Appendix 3-11

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual body weight of dams during the gestation period (Main group)

Dose (mg/kg/day): 300

Dam number	Administration							Gain 0-20
	0	4	7	11	14	17	20a)	
3101	265	290	302	319	334	361	411	146
3102	270	294	306	329	340	372	417	147
3103	242	273	283	313	323	354	400	158
3104	298	324	339	362	380	421	483	185
3105	263	288	294	319	328	360	413	150
3106	269	295	306	324	339	373	425	156
3107	271	304	318	338	351	377	425	154
3108	268	284	298	325	336	373	416	148
3109	276	298	307	326	342	365	399	123
3110	277	302	312	335	349	378	418	141
3111	251	284	289	306	318	343	388	137
3112	277	300	315	333	348	377	428	151
Mean	268.9	294.7	305.8	327.4	340.7	371.2	418.6	149.7
S.D.	13.9	12.8	14.7	14.2	16.1	19.0	23.5	14.6

Unit: g

a): Day of gestation

Appendix 3-12

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual body weight of dams during the gestation period (Main group)

Dose (mg/kg/day): 1000

Dam number	Administration							Gain 0-20
	0	4	7	11	14	17	20a)	
4101	275	308	321	336	352	386	434	159
4102	253	277	285	313	333	363	405	152
4103	269	306	320	341	357	393	449	180
4104	257	287	296	318	335	361	413	156
4105	267	289	296	324	333	368	417	150
4106	256	286	297	320	332	356	400	144
4107	269	302	309	325	344	373	416	147
4108	285	301	316	338	353	377	431	146
4109	270	297	312	342	358	392	447	177
4110	264	289	306	330	344	374	415	151
4111	267	281	290	307	333	358	399	132
4112	304	319	336	351	365	391	434	130
Mean	269.7	295.2	307.0	328.8	344.9	374.3	421.7	152.0
S.D.	13.9	12.4	14.9	13.2	11.8	13.6	17.1	15.0

Unit: g

a): Day of gestation

Appendix 3-13

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual body weight of dams during the lactation period (Main group)

Dose (mg/kg/day): 0

Dam number	Administration		Gain 0-4
	0	4a)	
1101	364	362	-2
1102	277	323	46
1103	302	316	14
1104	326	326	0
1105	318	342	24
1106	342	374	32
1107	313	337	24
1108	302	304	2
1109	332	361	29
1110	342	336	-6
1111	289	318	29
1112	293	326	33
Mean	316.7	335.4	18.8
S.D.	25.6	21.1	16.7

Unit: g

a): Day of lactation

Appendix 3-14

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual body weight of dams during the lactation period (Main group)

Dose (mg/kg/day): 100

Dam number	Administration		Gain 0-4
	0	4a)	
2101	355	367	12
2102	308	356	48
2103	355	375	20
2104	300	332	32
2105	297	324	27
2106	323	338	15
2107	341	346	5
2108	299	307	8
2109	383	367	-16
2110	338	360	22
2111	335	378	43
2112	340	363	23
Mean	331.2	351.1	19.9
S.D.	26.7	21.9	17.2

Unit: g

a): Day of lactation

Appendix 3-15

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual body weight of dams during the lactation period (Main group)

Dose (mg/kg/day): 300

Dam number	Administration		Gain 0-4
	0	4a)	
3101	286	326	40
3102	385	345	10
3103	314	336	22
3104	355	374	19
3105	326	340	14
3106	312	356	44
3107	349	346	-3
3108	336	341	5
3109	316	360	44
3110	334	372	38
3111	320	322	2
3112	329	363	34
Mean	326.0	348.4	22.4
S.D.	18.3	16.8	17.1

Unit: g

a): Day of lactation

Appendix 3-16

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual body weight of dams during the lactation period (Main group)

Dose (mg/kg/day): 1000

Dam number	Administration		Gain 0-4
	0	4a)	
4101	345	344	-1
4102	303	328	25
4103	336	357	21
4104	318	352	34
4105	310	333	23
4106	314	319	5
4107	327	336	9
4108	343	359	16
4109	364	369	5
4110	325	356	31
4111	305	315	10
4112	364	362	-2
Mean	329.5	344.2	14.7
S.D.	21.2	17.7	12.1

Unit: g

a): Day of lactation

Appendix 3-17

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual body weight of female rats during the administration period (Recovery group)

Dose (mg/kg/day): 0

Animal number	Day of administration												Gain 1-42	
	1	4	8	11	15	18	22	25	29	32	36	39		
1113	211	229	242	252	258	257	264	254	259	279	282	297	282	71
1114	231	235	243	237	246	260	260	264	267	267	268	272	273	42
1115	233	253	263	265	276	277	294	295	307	307	319	325	330	97
1116	251	258	271	271	287	278	289	304	300	307	313	319	317	66
1117	237	243	259	257	264	269	279	283	293	287	295	292	301	64
Mean	232.6	243.6	255.6	256.4	266.2	268.2	277.2	280.0	285.2	289.4	295.4	301.0	300.6	68.0
S.D.	14.4	12.1	12.7	13.1	15.9	9.6	15.0	20.9	21.1	17.6	21.2	21.4	23.7	19.7

Unit: g

Appendix 3-18

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual body weight of female rats during the administration period (Recovery group)

Dose (mg/kg/day): 1000

Animal number	Day of administration												Gain 1-42	
	1	4	8	11	15	18	22	25	29	32	36	39		
4113	247	250	256	256	262	278	290	298	293	295	302	307	312	65
4114	227	229	237	238	248	255	267	272	275	272	281	277	283	56
4115	250	259	261	264	267	265	274	277	283	289	292	295	292	42
4116	231	233	245	244	253	262	271	277	283	283	290	292	300	69
4117	228	240	254	264	272	281	290	288	294	310	321	329	327	99
Mean	236.6	242.2	250.6	253.2	260.4	268.2	278.4	282.4	285.6	289.8	297.2	300.0	302.8	66.2
S.D.	11.0	12.3	9.6	11.8	9.9	11.0	10.9	10.5	7.9	14.1	15.3	19.4	17.2	21.1

Unit: g

Appendix 3-19

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual body weight of male rats (Recovery period)

Dose (mg/kg/day): 0

Animal number	Day of recovery					Gain 1-14
	1	4	8	11	14	
1008	483	495	503	516	514	31
1009	514	518	522	524	521	7
1010	541	541	549	566	570	29
1011	416	421	430	438	449	33
1012	501	496	505	503	505	4
Mean	491.0	494.2	501.8	509.4	511.8	20.8
S.D.	47.0	45.1	44.2	46.4	43.2	14.1

Unit: g

Appendix 3-20

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual body weight of male rats (Recovery period)

Dose (mg/kg/day): 1000

Animal number	Day of recovery					Gain 1-14
	1	4	8	11	14	
4008	510	513	517	521	525	15
4009	479	484	492	502	501	22
4010	510	515	524	529	536	26
4011	533	536	552	556	557	24
4012	466	468	477	484	493	27
Mean	499.6	503.2	512.4	518.4	522.4	22.8
S.D.	26.9	27.0	29.1	27.3	26.0	4.8

Unit: g

Appendix 3-21

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual body weight of female rats during the recovery period (Recovery group)

Dose (mg/kg/day): 0

Animal number	Day of recovery					Gain 1-14
	1	4	8	11	14	
1113	290	287	300	293	303	13
1114	276	275	282	274	283	7
1115	324	332	330	329	340	16
1116	322	325	334	336	340	18
1117	294	303	315	314	307	13
Mean	301.2	304.4	312.2	309.2	314.6	13.4
S.D.	21.0	24.3	21.6	25.7	24.9	4.2

Unit: g

Appendix 3-22

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual body weight of female rats during the recovery period (Recovery group)

Dose (mg/kg/day): 1000

Animal number	Day of recovery					Gain 1-14
	1	4	8	11	14	
4113	304	308	309	317	316	12
4114	280	288	294	295	296	16
4115	298	296	299	307	315	17
4116	296	300	306	310	310	14
4117	331	335	337	336	344	13
Mean	301.8	305.4	309.0	313.0	316.2	14.4
S.D.	18.6	18.0	16.7	15.1	17.5	2.1

Unit: g

Appendix 4-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual food consumption of male rats (Administration period)

Dose (mg/kg/day): 0

Animal number	Day of administration								
	1	4	8	11	15	32	36	39	42
1001	26	29	28	29	29	30	31	31	31
1002	24	32	26	31	21	29	25	27	30
1003	28	30	30	27	26	27	29	24	27
1004	29	27	26	30	27	26	28	26	27
1005	30	29	29	33	32	35	30	30	34
1006	27	26	30	28	30	27	28	27	30
1007	30	30	26	28	26	29	26	26	27
1008	28	25	26	29	27	29	27	24	29
1009	29	29	27	30	30	28	27	30	32
1010	29	31	29	28	33	29	29	29	29
1011	26	28	27	24	24	30	30	27	30
1012	28	28	28	29	29	29	31	32	31
Mean	27.8	28.7	27.7	28.8	27.8	29.0	28.4	27.8	29.8
S.D.	1.8	2.0	1.6	2.2	3.4	2.3	1.9	2.6	2.1

Unit: g/rat/day

Appendix 4-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual food consumption of male rats (Administration period)

Dose (mg/kg/day): 100

Animal number	Day of administration								
	1	4	8	11	15	32	36	39	42
2001	26	27	27	27	27	30	31	27	30
2002	29	29	30	29	27	31	29	30	31
2003	27	29	26	27	27	31	29	28	30
2004	24	27	26	29	30	29	26	26	26
2005	29	29	28	31	28	29	25	26	30
2006	32	30	30	34	31	34	31	27	31
2007	26	28	28	30	28	29	28	26	28
2008	26	25	26	23	27	24	27	26	23
2009	31	33	31	28	31	27	26	29	26
2010	27	31	29	26	28	27	29	26	29
2011	25	26	25	26	28	26	29	28	27
2012	31	28	29	30	30	28	28	24	31
Mean	27.8	28.5	27.9	28.3	28.5	28.8	28.2	26.9	28.5
S.D.	2.6	2.2	1.9	2.8	1.6	2.6	1.9	1.6	2.5

Unit: g/rat/day

Appendix 4-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual food consumption of male rats (Administration period)

Dose (mg/kg/day): 300

Animal number	Day of administration								
	1	4	8	11	15	32	36	39	42
3001	22	26	26	25	26	26	26	25	27
3002	22	29	28	25	27	30	26	28	28
3003	28	29	27	27	26	29	25	28	26
3004	27	30	28	32	28	28	28	29	31
3005	25	24	27	25	26	30	27	30	29
3006	28	32	26	27	30	25	25	26	28
3007	24	29	29	29	31	35	32	32	34
3008	25	30	29	26	27	30	28	25	27
3009	25	34	27	28	30	30	28	30	28
3010	25	29	30	30	30	30	31	29	30
3011	21	24	26	23	22	26	24	23	23
3012	23	28	27	27	26	28	26	33	29
Mean	24.6	28.7	27.5	27.0	27.4	28.9	27.2	28.2	28.3
S.D.	2.3	2.9	1.3	2.5	2.5	2.6	2.4	3.0	2.7

Unit: g/rat/day

Appendix 4-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual food consumption of male rats (Administration period)

Dose (mg/kg/day): 1000

Animal number	Day of administration								
	1	4	8	11	15	32	36	39	42
4001	28	31	28	27	24	30	28	30	28
4002	22	26	25	26	23	27	27	26	27
4003	23	33	29	30	32	35	29	33	31
4004	28	30	28	25	29	31	26	24	26
4005	28	30	30	28	30	31	28	29	32
4006	28	29	28	29	28	30	29	31	35
4007	31	31	29	30	29	28	30	29	30
4008	26	28	30	30	32	31	29	30	30
4009	24	29	24	26	27	26	28	27	26
4010	31	27	29	27	29	27	28	26	27
4011	29	30	30	31	30	31	30	29	32
4012	19	33	30	31	26	32	31	30	31
Mean	26.4	29.8	28.3	28.3	28.3	29.9	28.6	28.7	29.6
S.D.	3.7	2.1	2.0	2.1	2.8	2.5	1.4	2.5	2.8

Unit: g/rat/day

Appendix 4-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual food consumption of female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 0

Animal number	Day of administration				
	1	4	8	11	15
1101	15	23	24	23	24
1102	13	20	24	20	21
1103	19	19	22	20	20
1104	15	22	23	23	21
1105	20	21	25	17	18
1106	18	22	26	17	19
1107	24	22	24	22	22
1108	22	24	24	23	24
1109	19	16	20	22	23
1110	20	24	20	22	20
1111	23	16	17	20	24
1112	14	19	23	23	25
Mean	18.5	20.7	22.7	21.0	21.8
S.D.	3.6	2.7	2.5	2.2	2.3

Unit: g/rat/day

Appendix 4-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual food consumption of female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 100

Animal number	Day of administration				
	1	4	8	11	15
2101	19	22	23	18	22
2102	16	21	23	21	21
2103	23	19	23	25	23
2104	17	21	21	20	23
2105	15	22	19	20	22
2106	22	23	23	20	24
2107	14	25	23	23	22
2108	19	20	20	16	15
2109	20	18	19	25	22
2110	15	21	23	21	21
2111	20	21	22	22	21
2112	15	21	21	23	21
Mean	17.9	21.2	21.7	21.2	21.4
S.D.	3.0	1.8	1.6	2.7	2.2

Unit: g/rat/day

Appendix 4-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual food consumption of female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 300

Animal number	Day of administration				
	1	4	8	11	15
3101	16	21	18	19	19
3102	21	22	25	19	21
3103	17	22	22	16	21
3104	21	20	23	23	25
3105	18	22	23	20	20
3106	21	24	25	22	22
3107	18	25	25	28	26
3108	17	25	24	23	22
3109	20	19	22	24	27
3110	20	23	24	18	16
3111	21	21	24	21	23
3112	17	23	25	23	23
Mean	18.9	22.3	23.3	21.3	22.1
S.D.	1.9	1.9	2.0	3.2	3.1

Unit: g/rat/day

Appendix 4-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual food consumption of female rats during the pre-mating period (Main group)

Dose (mg/kg/day): 1000

Animal number	Day of administration				
	1	4	8	11	15
4101	20	23	23	22	23
4102	14	26	25	22	23
4103	20	17	18	22	21
4104	18	19	21	18	20
4105	22	23	24	24	17
4106	17	22	23	19	20
4107	18	20	20	19	20
4108	16	22	21	15	16
4109	14	21	22	23	25
4110	20	17	19	22	21
4111	20	21	22	17	16
4112	23	23	24	17	18
Mean	18.5	21.2	21.8	20.0	20.0
S.D.	2.9	2.6	2.1	2.9	2.9

Unit: g/rat/day

Appendix 4-9

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual food consumption of dams during the gestation period (Main group)

Dose (mg/kg/day): 0

Dam number	Administration						
	1	4	7	11	14	17	20a)
1101	27	32	27	29	32	28	22
1102	22	26	24	25	26	27	21
1103	18	24	24	25	27	26	22
1104	26	26	24	26	24	26	19
1105	23	26	24	24	22	23	23
1106	22	26	23	24	27	31	25
1107	23	25	24	26	27	29	21
1108	16	25	26	25	24	28	24
1109	20	22	22	21	25	32	25
1110	26	27	26	26	27	33	23
1111	25	23	25	24	24	29	21
1112	23	25	24	26	26	28	21
Mean	22.6	25.6	24.4	25.1	25.9	28.3	22.3
S.D.	3.3	2.5	1.4	1.9	2.5	2.8	1.8

Unit: g/rat/day

a): Day of gestation

Appendix 4-10

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual food consumption of dams during the gestation period (Main group)

Dose (mg/kg/day): 100

Dam number	Administration						
	1	4	7	11	14	17	20a)
2101	21	24	23	28	24	25	25
2102	23	27	23	22	28	28	23
2103	26	24	26	27	26	29	23
2104	22	23	23	25	25	26	18
2105	20	23	23	24	24	27	21
2106	27	27	29	30	29	29	24
2107	22	28	24	30	25	29	20
2108	14	23	21	23	24	23	20
2109	23	31	31	32	31	33	29
2110	25	23	23	29	26	27	21
2111	23	27	28	29	28	28	20
2112	23	23	27	25	27	29	24
Mean	22.4	25.3	25.1	27.0	26.4	27.8	22.3
S.D.	3.3	2.7	3.1	3.2	2.2	2.5	3.0

Unit: g/rat/day

a): Day of gestation

Appendix 4-11

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual food consumption of dams during the gestation period (Main group)

Dose (mg/kg/day): 300

Dam number	Administration						
	1	4	7	11	14	17	20a)
3101	22	24	26	24	22	22	17
3102	21	23	26	29	25	26	25
3103	24	24	25	30	25	26	26
3104	26	26	27	30	28	31	29
3105	21	26	24	27	26	25	22
3106	21	26	24	26	27	26	21
3107	31	34	30	31	29	30	20
3108	23	28	27	30	27	31	22
3109	23	24	25	25	25	29	24
3110	25	28	24	28	26	32	24
3111	20	25	26	27	26	31	25
3112	23	30	26	27	26	24	20
Mean	23.3	26.5	25.8	27.8	26.0	27.8	22.9
S.D.	3.0	3.1	1.7	2.2	1.8	3.3	3.2

Unit: g/rat/day

a): Day of gestation

Appendix 4-12

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual food consumption of dams during the gestation period (Main group)

Dose (mg/kg/day): 1000

Dam number	Administration						
	1	4	7	11	14	17	20a)
4101	28	30	29	27	28	31	26
4102	21	26	25	28	28	28	21
4103	24	27	28	30	27	27	25
4104	25	26	28	26	25	28	23
4105	22	24	23	25	24	30	25
4106	25	26	24	25	23	25	21
4107	22	26	26	24	26	31	22
4108	21	24	24	26	24	25	22
4109	26	29	30	32	30	31	24
4110	25	23	26	25	27	30	24
4111	19	21	22	23	24	27	22
4112	20	26	27	26	25	29	24
Mean	23.2	25.7	26.0	26.4	25.9	28.5	23.3
S.D.	2.7	2.5	2.5	2.5	2.1	2.2	1.7

Unit: g/rat/day

a): Day of gestation

Appendix 4-13

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual food consumption of dams during the lactation period (Main group)

Dose (mg/kg/day): 0

Dam number	Administration	
	2	4a)
1101	27	40
1102	38	44
1103	29	47
1104	22	39
1105	33	38
1106	20	51
1107	29	42
1108	19	45
1109	22	47
1110	21	32
1111	25	49
1112	35	50
Mean	26.7	43.7
S.D.	6.3	5.7

Unit: g/rat/day

a): Day of lactation

Appendix 4-14

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual food consumption of dams during the lactation period (Main group)

Dose (mg/kg/day): 100

Dam number	Administration	
	2	4a)
2101	30	46
2102	34	49
2103	33	53
2104	34	42
2105	31	37
2106	27	49
2107	16	45
2108	25	38
2109	24	39
2110	28	50
2111	29	54
2112	38	56
Mean	29.1	46.5
S.D.	5.8	6.4

Unit: g/rat/day

a): Day of lactation

Appendix 4-15

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual food consumption of dams during the lactation period (Main group)

Dose (mg/kg/day): 300

Dam number	Administration	
	2	4a)
3101	16	46
3102	28	44
3103	29	47
3104	24	52
3105	26	47
3106	37	58
3107	28	42
3108	30	50
3109	33	49
3110	30	49
3111	23	34
3112	34	51
Mean	28.2	47.4
S.D.	5.6	5.9

Unit: g/rat/day

a): Day of lactation

Appendix 4-16

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual food consumption of dams during the lactation period (Main group)

Dose (mg/kg/day): 1000

Dam number	Administration	
	2	4a)
4101	26	35
4102	26	42
4103	34	46
4104	31	50
4105	27	45
4106	23	33
4107	26	39
4108	29	39
4109	32	39
4110	33	48
4111	20	40
4112	24	42
Mean	27.6	41.5
S.D.	4.3	5.1

Unit: g/rat/day

a): Day of lactation

Appendix 4-17

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual food consumption of female rats during the administration period (Recovery group)

Dose (mg/kg/day): 0

Animal number	Day of administration								
	1	4	8	11	15	32	36	39	42
1113	11	20	23	22	22	22	21	24	21
1114	19	22	21	12	15	19	18	18	23
1115	12	24	23	20	24	22	24	20	24
1116	22	25	27	25	27	23	24	23	23
1117	20	22	23	18	18	19	21	18	24
Mean	16.8	22.6	23.4	19.4	21.2	21.0	21.6	20.6	23.0
S.D.	5.0	1.9	2.2	4.9	4.8	1.9	2.5	2.8	1.2

Unit: g/rat/day

Appendix 4-18

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual food consumption of female rats during the administration period (Recovery group)

Dose (mg/kg/day): 1000

Animal number	Day of administration								
	1	4	8	11	15	32	36	39	42
4113	22	24	24	18	16	21	23	19	22
4114	20	20	20	17	19	20	20	16	23
4115	23	25	24	24	24	26	25	22	20
4116	22	22	22	17	20	21	19	15	22
4117	17	27	25	24	28	29	30	26	26
Mean	20.8	23.6	23.0	20.0	21.4	23.4	23.4	19.6	22.6
S.D.	2.4	2.7	2.0	3.7	4.7	3.9	4.4	4.5	2.2

Unit: g/rat/day

Appendix 4-19

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual food consumption of male rats (Recovery period)

Dose (mg/kg/day): 0

Animal number	Day of recovery				
	1	4	8	11	14
1008	24	28	30	30	31
1009	27	27	31	28	26
1010	28	28	29	33	30
1011	30	28	28	31	28
1012	31	26	30	27	31
Mean	28.0	27.4	29.6	29.8	29.2
S.D.	2.7	0.9	1.1	2.4	2.2

Unit: g/rat/day

Appendix 4-20

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual food consumption of male rats (Recovery period)

Dose (mg/kg/day): 1000

Animal number	Day of recovery				
	1	4	8	11	14
4008	28	27	25	27	25
4009	23	27	22	29	27
4010	26	28	30	26	32
4011	30	27	31	34	26
4012	26	27	28	29	31
Mean	26.6	27.2	27.2	29.0	28.2
S.D.	2.6	0.4	3.7	3.1	3.1

Unit: g/rat/day

Appendix 4-21

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual food consumption of female rats during the recovery period (Recovery group)

Dose (mg/kg/day): 0

Animal number	Day of recovery				
	1	4	8	11	14
1113	20	18	22	13	19
1114	21	19	22	14	23
1115	19	22	22	19	27
1116	21	18	26	23	25
1117	17	22	25	24	18
Mean	19.6	19.8	23.4	18.6	22.4
S.D.	1.7	2.0	1.9	5.0	3.8

Unit: g/rat/day

Appendix 4-22

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual food consumption of female rats during the recovery period (Recovery group)

Dose (mg/kg/day): 1000

Animal number	Day of recovery				
	1	4	8	11	14
4113	17	22	22	24	24
4114	17	19	24	22	20
4115	20	15	20	26	27
4116	19	20	23	22	20
4117	26	24	26	23	28
Mean	19.8	20.0	23.0	23.4	23.8
S.D.	3.7	3.4	2.2	1.7	3.8

Unit: g/rat/day

Appendix 5-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual urinalysis of male rats (Week 6 of administration)

Dose (mg/kg/day) : 0

Animal number	pH	1) Pro- tein	2) Ketone body	3) Glu- cose	4) Occult blood	5) Bili- rubin	6) Urobi- linogen	7) Color
1008	7.0	+-	-	-	-	-	+-	Y
1009	8.5	+-	+-	-	-	-	+-	Y
1010	7.0	+-	+-	-	-	-	+-	Y
1011	8.5	+	+-	-	-	-	+-	Y
1012	8.5	+	+-	-	-	-	+-	Y

1) - : <10 mg/dL +- : 10 - 25 mg/dL + : 26 - 85 mg/dL ++ : 86 - 250 mg/dL +++ : 251 - 600 mg/dL ++++ : >600 mg/dL
 2) - : <5 mg/dL +- : 5 - 7.5 mg/dL + : 7.6 - 30 mg/dL ++ : 31 - 70 mg/dL +++ : 71 - 125 mg/dL ++++ : >125 mg/dL
 3) - : <30 mg/dL +- : 30 - 60 mg/dL + : 61 - 125 mg/dL ++ : 126 - 250 mg/dL +++ : 251 - 750 mg/dL ++++ : >750 mg/dL
 4) - : <0.03 mg/dL +- : 0.03 - 0.05 mg/dL + : 0.06 - 0.15 mg/dL ++ : 0.16 - 0.75 mg/dL +++ : >0.75 mg/dL
 5) - : <0.5 mg/dL + : 0.5 - 1.5 mg/dL ++ : 1.6 - 5.0 mg/dL +++ : 5.1 - 10.0 mg/dL ++++ : >10.0 mg/dL
 6) +- : <2.0 mg/dL + : 2.0 - 3.5 mg/dL ++ : 3.6 - 7.0 mg/dL +++ : 7.1 - 12.0 mg/dL ++++ : >12.0 mg/dL
 7) LY : Light yellow Y : Yellow DY : Dark yellow

Appendix 5-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual urinalysis of male rats (Week 6 of administration)

Dose (mg/kg/day) : 0

Animal number	URINE SEDIMENT						CRYSTALLIZATION	
	RBC	WBC	SEC	SREC	Cast	PS	CO	
1008	-	-	++	-	-	-	-	-
1009	-	-	++	-	-	++	-	-
1010	-	-	++	-	-	++	-	-
1011	-	-	++	-	-	++	-	-
1012	-	-	++	-	-	++	-	-

SEC	Squamous Epithelial Cell	-	Negative
SREC	Small Round Epithelial Cell	+-	Slight
PS	Phosphate Salts	+	Mild
CO	Calcium Oxalate	++	Moderate
		+++	Severe

Appendix 5-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual water intake and urinalysis (Week 6 of administration)

Sex : Male

Dose (mg/kg/day) : 0

Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
1008	53	17.4	1724
1009	43	14.6	2184
1010	56	28.8	1436
1011	35	10.5	2532
1012	36	17.8	2118
Mean	45	17.8	1999
S.D.	10	6.8	426

Appendix 5-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual urinalysis of male rats (Week 6 of administration)

Dose (mg/kg/day) : 100

Animal number	pH	1) Pro-tein	2) Ketone body	3) Glu-cose	4) Occult blood	5) Bili-rubin	6) Urobi-linogen	7) Color
2001	7.5	++	-	-	-	-	++	Y
2002	8.5	++	-	-	-	-	++	Y
2003	8.0	++	-	-	+-	-	++	Y
2004	8.0	-	-	-	-	-	++	Y
2005	8.5	+	+-	-	-	-	++	Y

1) - : <10 mg/dL ++ : 10 - 25 mg/dL + : 26 - 85 mg/dL ++ : 86 - 250 mg/dL +++ : 251 - 600 mg/dL ++++ : >600 mg/dL
 2) - : <5 mg/dL ++ : 5 - 7.5 mg/dL + : 7.6 - 30 mg/dL ++ : 31 - 70 mg/dL +++ : 71 - 125 mg/dL ++++ : >125 mg/dL
 3) - : <30 mg/dL ++ : 30 - 60 mg/dL + : 61 - 125 mg/dL ++ : 126 - 250 mg/dL +++ : 251 - 750 mg/dL ++++ : >750 mg/dL
 4) - : <0.03 mg/dL ++ : 0.03 - 0.05 mg/dL + : 0.06 - 0.15 mg/dL ++ : 0.16 - 0.75 mg/dL +++ : >0.75 mg/dL
 5) - : <0.5 mg/dL + : 0.5 - 1.5 mg/dL ++ : 1.6 - 5.0 mg/dL +++ : 5.1 - 10.0 mg/dL ++++ : >10.0 mg/dL
 6) +- : <2.0 mg/dL + : 2.0 - 3.5 mg/dL ++ : 3.6 - 7.0 mg/dL +++ : 7.1 - 12.0 mg/dL ++++ : >12.0 mg/dL
 7) LY : Light yellow Y : Yellow DY : Dark yellow

Appendix 5-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual urinalysis of male rats (Week 6 of administration)

Dose (mg/kg/day) : 100

Animal number	URINE SEDIMENT					CRYSTALLIZATION	
	RBC	WBC	SEC	SREC	Cast	PS	CO
2001	-	-	+-	-	-	+-	-
2002	-	-	+-	-	-	+-	-
2003	-	-	+-	-	-	+-	-
2004	-	-	+-	-	-	+-	-
2005	-	-	+-	-	-	+-	-

SEC : Squamous Epithelial Cell - : Negative
 SREC : Small Round Epithelial Cell +- : Slight
 PS : Phosphate Salts + : Mild
 CO : Calcium Oxalate ++ : Moderate
 +++ : Severe

Appendix 5-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual water intake and urinalysis (Week 6 of administration)

Sex : Male

Dose (mg/kg/day) : 100

Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
2001	61	27.6	1560
2002	43	17.7	1976
2003	40	13.6	1900
2004	49	26.9	1560
2005	38	11.5	1986
Mean	46	19.5	1796
S.D.	9	7.5	218

Appendix 5-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual urinalysis of male rats (Week 6 of administration)

Dose (mg/kg/day) : 300

Animal number	pH	1) Pro-tein	2) Ketone body	3) Glu-cose	4) Occult blood	5) Bili-rubin	6) Urobi-linogen	7) Color
3001	8.5	+	+	-	-	-	+-	Y
3002	7.5	++	++	-	-	-	+-	Y
3003	9.0	+	+-	-	-	-	+-	Y
3004	7.0	++	-	-	-	-	+-	Y
3005	8.5	++	-	-	-	-	+-	Y

1) - : <10 mg/dL ++ : 10 - 25 mg/dL + : 26 - 85 mg/dL ++ : 86 - 250 mg/dL +++ : 251 - 600 mg/dL ++++ : >600 mg/dL
 2) - : <5 mg/dL ++ : 5 - 7.5 mg/dL + : 7.6 - 30 mg/dL ++ : 31 - 70 mg/dL +++ : 71 - 125 mg/dL ++++ : >125 mg/dL
 3) - : <30 mg/dL ++ : 30 - 60 mg/dL + : 61 - 125 mg/dL ++ : 126 - 250 mg/dL +++ : 251 - 750 mg/dL ++++ : >750 mg/dL
 4) - : <0.03 mg/dL ++ : 0.03 - 0.05 mg/dL + : 0.06 - 0.15 mg/dL ++ : 0.16 - 0.75 mg/dL +++ : >0.75 mg/dL
 5) - : <0.5 mg/dL + : 0.5 - 1.5 mg/dL ++ : 1.6 - 5.0 mg/dL +++ : 5.1 - 10.0 mg/dL ++++ : >10.0 mg/dL
 6) +- : <2.0 mg/dL + : 2.0 - 3.5 mg/dL ++ : 3.6 - 7.0 mg/dL +++ : 7.1 - 12.0 mg/dL ++++ : >12.0 mg/dL
 7) LY : Light yellow Y : Yellow DY : Dark yellow

Appendix 5-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual urinalysis of male rats (Week 6 of administration)

Dose (mg/kg/day) : 300

Animal number	URINE SEDIMENT					CRYSTALLIZATION	
	RBC	WBC	SEC	SREC	Cast	PS	CO
3001	-	-	+-	-	-	+-	-
3002	-	-	+-	-	-	+-	-
3003	-	-	+-	-	-	+-	-
3004	-	-	+-	-	-	+-	-
3005	-	-	+-	-	-	+-	-

SEC	Squamous Epithelial Cell	-	Negative
SREC	Small Round Epithelial Cell	+-	Slight
PS	Phosphate Salts	+	Mild
CO	Calcium Oxalate	++	Moderate
		+++	Severe

Appendix 5-9

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual water intake and urinalysis (Week 6 of administration)

Sex : Male

Dose (mg/kg/day) : 300

Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
3001	30	11.3	1976
3002	48	18.2	1926
3003	41	11.3	2348
3004	45	19.2	1950
3005	40	22.9	1772
Mean	41	16.6	1994
S.D.	7	5.1	213

Appendix 5-10

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual urinalysis of male rats (Week 6 of administration)

Dose (mg/kg/day) : 1000

Animal number	pH	1) Pro-tein	2) Ketone body	3) Glu-cose	4) Occult blood	5) Bili-rubin	6) Urobi-linogen	7) Color
4008	9.0	+-	-	-	-	-	+-	Y
4009	8.0	+-	-	-	-	-	+-	Y
4010	8.5	+	+-	-	-	-	+-	Y
4011	8.5	+-	-	-	-	-	+-	Y
4012	7.5	+	+-	-	-	-	+	Y

1) - : <10 mg/dL +- : 10 - 25 mg/dL + : 26 - 85 mg/dL ++ : 86 - 250 mg/dL +++ : 251 - 600 mg/dL ++++ : >600 mg/dL
 2) - : <5 mg/dL +- : 5 - 7.5 mg/dL + : 7.6 - 30 mg/dL ++ : 31 - 70 mg/dL +++ : 71 - 125 mg/dL ++++ : >125 mg/dL
 3) - : <30 mg/dL +- : 30 - 60 mg/dL + : 61 - 125 mg/dL ++ : 126 - 250 mg/dL +++ : 251 - 750 mg/dL ++++ : >750 mg/dL
 4) - : <0.03 mg/dL +- : 0.03 - 0.05 mg/dL + : 0.06 - 0.15 mg/dL ++ : 0.16 - 0.75 mg/dL +++ : >0.75 mg/dL
 5) - : <0.5 mg/dL + : 0.5 - 1.5 mg/dL ++ : 1.6 - 5.0 mg/dL +++ : 5.1 - 10.0 mg/dL ++++ : >10.0 mg/dL
 6) +- : <2.0 mg/dL + : 2.0 - 3.5 mg/dL ++ : 3.6 - 7.0 mg/dL +++ : 7.1 - 12.0 mg/dL ++++ : >12.0 mg/dL
 7) LY : Light yellow Y : Yellow DY : Dark yellow

Appendix 5-11

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual urinalysis of male rats (Week 6 of administration)

Dose (mg/kg/day) : 1000

Animal number	URINE SEDIMENT						
	RBC	WBC	SEC	SREC	Cast	CRYSTALLIZATION	
						PS	CO
4008	-	-	++	-	-	++	-
4009	-	-	++	-	-	++	-
4010	-	-	++	-	-	++	-
4011	-	-	++	-	-	++	-
4012	-	-	++	-	-	++	-

SEC : Squamous Epithelial Cell - : Negative
 SREC : Small Round Epithelial Cell ++ : Slight
 PS : Phosphate Salts + : Mild
 CO : Calcium Oxalate ++ : Moderate
 *** : Severe

Appendix 5-12

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual water intake and urinalysis (Week 6 of administration)

Sex : Male

Dose (mg/kg/day) : 1000

Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
4008	44	19.4	1676
4009	31	20.6	1902
4010	32	17.7	2050
4011	64	30.2	1306
4012	32	10.7	2570
Mean	41	19.7	1901
S.D.	14	7.0	468

Appendix 5-13

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual urinalysis of male rats (Week 2 of recovery)

Dose (mg/kg/day) : 0

Animal number	pH	1) Pro-tein	2) Ketone body	3) Glu-cose	4) Occult blood	5) Bili-rubin	6) Urobi-linogen	7) Color
1008	8.5	+	-	-	-	-	+-	Y
1009	9.0	+-	-	-	-	-	+-	Y
1010	7.0	-	-	-	-	-	+-	Y
1011	8.5	+	+	-	-	-	+-	Y
1012	8.0	+	+-	-	-	-	+-	Y

1)	- : <10 mg/dL	++ : 10 - 25 mg/dL	+ : 26 - 85 mg/dL	++ : 86 - 250 mg/dL	+++ : 251 - 600 mg/dL	++++ : >600 mg/dL
2)	- : <5 mg/dL	++ : 5 - 7.5 mg/dL	+ : 7.6 - 30 mg/dL	++ : 31 - 70 mg/dL	+++ : 71 - 125 mg/dL	++++ : >125 mg/dL
3)	- : <30 mg/dL	++ : 30 - 60 mg/dL	+ : 61 - 125 mg/dL	++ : 126 - 250 mg/dL	+++ : 251 - 750 mg/dL	++++ : >750 mg/dL
4)	- : <0.03 mg/dL	++ : 0.03 - 0.05 mg/dL	+ : 0.06 - 0.15 mg/dL	++ : 0.16 - 0.75 mg/dL	+++ : >0.75 mg/dL	
5)	- : <0.5 mg/dL	+ : 0.5 - 1.5 mg/dL	++ : 1.6 - 5.0 mg/dL	+++ : 5.1 - 10.0 mg/dL	++++ : >10.0 mg/dL	
6)	++ : <2.0 mg/dL	+ : 2.0 - 3.5 mg/dL	++ : 3.6 - 7.0 mg/dL	+++ : 7.1 - 12.0 mg/dL	++++ : >12.0 mg/dL	
7)	LY : Light yellow	Y : Yellow	DY : Dark yellow			

Appendix 5-14

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual urinalysis of male rats (Week 2 of recovery)

Dose (mg/kg/day) : 0

Animal number	URINE SEDIMENT						
	RBC	WBC	SEC	SREC	Cast	CRYSTALLIZATION	
						PS	CO
1008	-	-	++	-	-	+-	-
1009	-	-	++	-	-	-	-
1010	-	-	++	-	-	+-	-
1011	-	-	++	-	-	+	-
1012	-	-	++	-	-	+-	-

SEC : Squamous Epithelial Cell - : Negative
 SREC : Small Round Epithelial Cell +- : Slight
 PS : Phosphate Salts + : Mild
 CO : Calcium Oxalate ++ : Moderate
 +++ : Severe

Appendix 5-15

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual water intake and urinalysis (Week 2 of recovery)

Sex : Male

Dose (mg/kg/day) : 0

Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
1008	45	15.5	1968
1009	33	8.2	2404
1010	56	27.9	1468
1011	37	8.9	2482
1012	31	13.5	2216
Mean	40	14.8	2108
S.D.	10	7.9	409

Appendix 5-16

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual urinalysis of male rats (Week 2 of recovery)

Dose (mg/kg/day) : 1000

Animal number	pH	1) Pro-tein	2) Ketone body	3) Glu-cose	4) Occult blood	5) Bili-rubin	6) Urobi-linogen	7) Color
4008	7.5	+	+-	-	-	-	+	Y
4009	8.5	-	-	-	-	-	+-	Y
4010	7.5	+-	-	-	-	-	+-	Y
4011	8.5	+-	+-	-	-	-	+-	Y
4012	7.5	+	+	-	-	-	+	Y

1) - : <10 mg/dL +- : 10 - 25 mg/dL + : 26 - 85 mg/dL ++ : 86 - 250 mg/dL +++ : 251 - 600 mg/dL ++++ : >600 mg/dL
 2) - : <5 mg/dL +- : 5 - 7.5 mg/dL + : 7.6 - 30 mg/dL ++ : 31 - 70 mg/dL +++ : 71 - 125 mg/dL ++++ : >125 mg/dL
 3) - : <30 mg/dL +- : 30 - 60 mg/dL + : 61 - 125 mg/dL ++ : 126 - 250 mg/dL +++ : 251 - 750 mg/dL ++++ : >750 mg/dL
 4) - : <0.03 mg/dL +- : 0.03 - 0.05 mg/dL + : 0.06 - 0.15 mg/dL ++ : 0.16 - 0.75 mg/dL +++ : >0.75 mg/dL
 5) - : <0.5 mg/dL + : 0.5 - 1.5 mg/dL ++ : 1.6 - 5.0 mg/dL +++ : 5.1 - 10.0 mg/dL ++++ : >10.0 mg/dL
 6) +- : <2.0 mg/dL + : 2.0 - 3.5 mg/dL ++ : 3.6 - 7.0 mg/dL +++ : 7.1 - 12.0 mg/dL ++++ : >12.0 mg/dL
 7) LY : Light yellow Y : Yellow DY : Dark yellow

Appendix 5-17

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual urinalysis of male rats (Week 2 of recovery)

Dose (mg/kg/day) : 1000

Animal number	URINE SEDIMENT						CRYSTALLIZATION	
	RBC	WBC	SEC	SREC	Cast	PS	CO	
4008	-	-	++	-	-	++	-	
4009	-	-	+-	-	-	+-	-	
4010	-	-	+-	-	-	+-	-	
4011	-	-	+-	-	-	+-	-	
4012	-	-	++	-	-	++	-	

SEC	: Squamous Epithelial Cell	-	: Negative
SREC	: Small Round Epithelial Cell	+-	: Slight
PS	: Phosphate Salts	+	: Mild
CO	: Calcium Oxalate	++	: Moderate
		+++	: Severe

Appendix 5-18

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual water intake and urinalysis (Week 2 of recovery)

Sex : Male

Dose (mg/kg/day) : 1000

Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
4008	38	18.0	1730
4009	43	16.0	2000
4010	39	16.8	1880
4011	63	34.0	1102
4012	33	8.4	2524
Mean	43	18.6	1847
S.D.	12	9.4	513

Appendix 6-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual hematology (Week 6 of administration)

Sex : Male

Dose mg/kg/day	Animal number	RBC X10 ⁶ /μL	Hb g/dL	Ht %	MCV fL	MCH pg	MCHC g/dL	Reticu- locyte %	Plate- let X10 ³ /μL	PT s	APTT s	Fibri- nogen mg/dL	WBC X10 ³ /μL
0	1001	842	16.6	46.1	54.7	19.7	36.1	2.1	137.2	18.0	24.4	293	118.1
	1002	904	16.5	45.1	49.9	18.3	36.6	1.3	133.4	12.9	17.4	291	96.0
	1003	867	16.1	43.5	50.2	18.5	37.0	1.1	129.0	13.8	20.7	304	89.4
	1004	901	15.8	44.9	49.8	17.5	35.2	1.7	124.7	16.9	23.1	329	80.2
	1005	843	16.1	43.2	51.3	19.1	37.2	1.6	123.6	15.1	21.4	309	137.9
	Mean	871	16.2	44.6	51.2	18.6	36.4	1.6	129.6	15.3	21.4	305	104.3
100	S.D.	30	0.3	1.2	2.1	0.8	0.8	0.4	5.8	2.1	2.7	15	23.4
	2001	882	15.1	42.0	47.7	17.2	36.0	1.7	121.3	11.8	15.5	266	121.5
	2002	868	16.6	44.6	51.4	19.2	37.3	2.1	126.6	13.3	23.2	315	108.3
	2003	927	16.7	45.1	48.7	18.0	37.0	1.4	132.6	15.4	21.6	315	90.2
	2004	867	15.9	42.7	49.3	18.3	37.2	1.7	124.7	14.1	19.9	299	105.1
	2005	894	16.5	44.5	49.8	18.4	37.0	1.5	125.5	14.8	23.2	315	117.2
300	Mean	888	16.2	43.8	49.4	18.2	36.9	1.7	126.1	13.9	20.7	302	108.5
	S.D.	25	0.7	1.3	1.4	0.7	0.5	0.3	4.1	1.4	3.2	21	12.2
	3001	931	16.2	44.3	47.6	17.5	36.7	1.7	117.5	16.2	20.7	318	110.9
	3002	899	16.2	43.8	48.7	18.0	36.9	1.4	127.5	12.3	18.5	297	113.4
	3003	940	16.4	45.1	48.0	17.5	36.4	1.3	127.2	17.8	17.3	330	112.7
	3004	918	16.6	44.8	48.9	18.1	37.1	1.4	118.6	15.4	20.2	338	94.1
1000	3005	920	16.6	45.0	48.9	18.1	37.0	1.5	112.7	12.1	17.5	345	86.4
	Mean	922	16.4	44.6	48.4	17.8	36.8	1.5	120.7	14.8	18.8	326	103.5
	S.D.	15	0.2	0.5	0.6	0.3	0.3	0.2	6.5	2.5	1.5	19	12.4
	4001	782	15.6	41.8	53.4	20.0	37.4	2.0	112.0	12.8	17.5	297	140.2
	4002	870	15.9	43.3	49.8	18.3	36.8	1.5	137.0	16.6	21.1	283	170.3
	4003	839	15.8	42.7	50.8	18.8	36.9	1.7	104.7	13.2	17.4	310	157.6
4000	4004	924	17.1	46.4	50.2	18.4	36.8	1.6	86.3	16.2	21.4	269	103.6
	4005	904	16.1	43.3	48.0	17.8	37.2	1.2	118.7	13.0	19.3	294	71.0
	Mean	864	16.1	43.5	50.4	18.7	37.0	1.6	111.7	14.4	19.3	291	128.5
	S.D.	56	0.6	1.7	2.0	0.8	0.3	0.3	18.6	1.9	1.9	15	40.8

Appendix 6-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual hematology (Week 6 of administration)

Sex : Male

Dose mg/kg/day	Animal number	Differential leukocyte counts (%)					Differential leukocyte counts ($\times 10^2/\mu\text{L}$)						
		Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC
0	1001	74.0	22.3	0.6	0.4	2.0	0.7	87.3	26.4	0.7	0.4	2.4	0.8
	1002	78.7	17.7	1.0	0.4	1.9	0.2	75.5	17.0	1.0	0.4	1.8	0.2
	1003	81.8	14.6	2.0	0.2	0.8	0.6	73.2	13.0	1.8	0.2	0.7	0.5
	1004	70.5	22.9	1.8	0.3	3.1	1.4	56.6	18.4	1.4	0.3	2.5	1.1
	1005	77.7	18.8	1.0	0.5	1.3	0.7	107.1	25.9	1.4	0.7	1.8	0.9
	Mean	76.5	19.3	1.3	0.4	1.8	0.7	79.9	20.1	1.3	0.4	1.8	0.7
100	S.D.	4.4	3.4	0.6	0.1	0.9	0.4	18.7	5.8	0.4	0.2	0.7	0.4
	2001	79.2	15.8	2.4	0.5	1.5	0.7	96.3	19.2	2.9	0.6	1.8	0.8
	2002	73.1	23.2	1.0	0.2	2.0	0.4	79.2	25.1	1.1	0.2	2.2	0.5
	2003	75.9	20.3	1.2	0.2	2.1	0.3	68.5	18.3	1.1	0.2	1.9	0.2
	2004	63.0	31.2	1.6	0.3	3.6	0.4	66.2	32.8	1.7	0.3	3.8	0.4
	2005	67.7	28.9	1.5	0.2	1.2	0.5	79.3	33.8	1.8	0.2	1.4	0.6
300	Mean	71.8	23.9	1.5	0.3	2.1	0.5	77.9	25.8	1.7	0.3	2.2	0.5
	S.D.	6.5	6.3	0.5	0.1	0.9	0.2	11.9	7.3	0.7	0.2	0.9	0.2
	3001	81.8	14.8	1.0	0.4	1.4	0.6	90.7	16.5	1.2	0.4	1.5	0.6
	3002	72.3	23.2	1.7	0.3	1.9	0.6	82.0	26.3	2.0	0.3	2.2	0.7
	3003	79.1	16.3	1.5	0.3	2.5	0.3	89.2	18.4	1.7	0.4	2.8	0.3
	3004	60.4	36.9	1.0	0.2	1.3	0.2	56.9	34.7	1.0	0.2	1.2	0.2
1000	3005	80.0	16.9	0.7	0.2	1.7	0.5	69.2	14.6	0.6	0.2	1.5	0.5
	Mean	74.7	21.6	1.2	0.3	1.8	0.4	77.6	22.1	1.3	0.3	1.8	0.5
	S.D.	8.8	9.1	0.4	0.1	0.5	0.2	14.4	8.3	0.6	0.1	0.7	0.2
	4001	78.4	17.7	1.1	0.4	1.9	0.4	109.8	24.8	1.6	0.6	2.7	0.6
	4002	84.9	11.5	1.2	0.5	1.4	0.6	144.6	19.6	2.0	0.8	2.3	1.0
	4003	65.0	30.7	0.7	0.4	2.5	0.6	102.5	48.5	1.1	0.6	4.0	1.0
4000	4004	82.5	14.2	0.5	0.3	2.1	0.4	85.5	14.7	0.6	0.3	2.2	0.4
	4005	67.9	27.5	2.0	0.2	1.4	0.9	48.2	19.5	1.4	0.2	1.0	0.6
	Mean	75.7	20.3	1.1	0.4	1.9	0.6	98.1	25.4	1.3	0.5	2.4	0.7
	S.D.	8.9	8.4	0.6	0.1	0.5	0.2	35.2	13.4	0.5	0.2	1.1	0.3

LUC : Large unstained cells

Appendix 6-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual hematology (Day 5 of lactation)

Sex : Female

Dose mg/kg/day	Animal number	RBC X10 ⁶ /µL	Hb g/dL	Ht %	MCV fL	MCH pg	MCHC g/dL	Reticu- locyte %	Plate- let X10 ³ /µL	PT s	APTT s	Fibri- nogen mg/dL	WBC X10 ³ /µL
0	1101	721	13.7	38.2	53.0	19.0	35.8	5.6	156.4	12.3	17.2	408	122.9
	1102	769	15.0	41.2	53.5	19.5	36.5	5.1	141.6	12.0	16.1	466	116.6
	1104	681	13.4	36.7	53.9	19.7	36.6	5.4	166.7	14.8	26.7	360	100.5
	1107	700	13.3	37.9	54.2	19.0	35.1	6.7	168.0	12.8	14.6	295	167.6
	1111	766	15.7	43.8	57.2	20.5	35.9	7.8	146.1	12.9	18.5	376	119.0
	Mean	727	14.2	39.6	54.4	19.5	36.0	6.1	155.8	13.0	18.6	381	125.3
100	S.D.	39	1.1	2.9	1.7	0.6	0.6	1.1	11.9	1.1	4.7	63	25.1
	2101	723	14.4	39.5	54.7	20.0	36.5	5.9	176.2	13.2	17.9	306	83.9
	2102	686	12.8	35.7	52.1	18.7	35.8	7.0	136.3	12.9	15.3	339	139.8
	2103	681	13.4	35.8	52.5	19.6	37.4	5.9	202.0	11.4	14.3	345	126.0
	2107	639	13.3	36.0	56.4	20.8	36.8	6.8	153.9	12.9	16.9	336	111.9
	2109	751	13.9	38.5	51.2	18.5	36.2	4.5	167.0	12.1	15.6	371	187.4
300	Mean	696	13.6	37.1	53.4	19.5	36.5	6.0	167.1	12.5	16.0	339	129.8
	S.D.	43	0.6	1.8	2.1	0.9	0.6	1.0	24.6	0.7	1.4	23	38.3
	3101	707	13.0	36.1	51.0	18.4	36.0	5.1	127.2	13.9	21.0	367	103.8
	3102	737	14.3	39.3	58.4	19.4	36.4	4.4	148.3	12.1	14.4	269	105.4
	3103	780	15.0	42.0	58.8	19.3	35.8	5.3	175.6	11.8	14.4	364	195.1
	3104	636	12.7	34.8	54.7	20.0	36.5	6.7	160.7	11.8	14.0	291	213.3
1000	3106	727	14.3	39.4	54.1	19.7	36.4	6.3	144.9	13.9	17.0	318	84.7
	Mean	717	13.9	38.3	53.4	19.4	36.2	5.6	151.3	12.7	16.2	322	140.5
	S.D.	53	1.0	2.9	1.4	0.6	0.3	0.9	18.1	1.1	3.0	44	59.1
	4101	752	14.3	38.9	51.7	19.0	36.8	2.9	176.4	12.4	17.3	294	129.5
	4102	618	12.9	35.8	57.9	20.8	36.0	8.7	184.1	12.1	17.7	345	105.8
	4103	730	14.4	40.0	54.9	19.7	35.9	6.3	136.5	12.1	16.0	268	153.3
4106	777	14.4	39.5	50.9	18.6	36.5	3.4	156.6	11.8	14.3	257	108.0	
	4110	750	14.0	38.9	51.9	18.6	35.9	3.9	163.7	12.3	16.5	322	103.2
	Mean	725	14.0	38.6	53.5	19.3	36.2	5.0	163.5	12.1	16.4	297	120.0
4106	S.D.	62	0.6	1.6	2.9	0.9	0.4	2.4	18.5	0.2	1.3	37	21.4

Appendix 6-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual hematology (Day 5 of lactation)

Sex : Female

Dose mg/kg/day	Animal number	Differential leukocyte counts (%)					Differential leukocyte counts ($\times 10^3/\mu\text{L}$)				
		Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	Lymph.	Neut.	Eosino.	Baso.
0	1101	60.4	36.8	0.6	0.3	1.3	0.6	74.2	45.2	0.8	0.3
	1102	59.8	37.2	0.6	0.2	1.3	0.9	69.7	43.4	0.7	0.3
	1104	49.6	45.6	0.7	0.2	2.8	1.1	49.9	45.8	0.7	0.2
	1107	61.9	33.7	0.5	0.3	2.8	0.9	103.7	56.4	0.9	0.5
	1111	69.4	24.9	0.5	0.3	4.0	0.9	82.6	29.6	0.6	0.4
	Mean	60.2	35.6	0.6	0.3	2.4	0.9	76.0	44.1	0.7	0.3
100	S.D.	7.1	7.5	0.1	0.1	1.2	0.2	19.6	9.6	0.1	0.1
	2101	71.7	23.1	0.9	0.2	3.0	1.2	60.2	19.4	0.8	0.1
	2102	72.7	24.4	0.4	0.2	2.0	0.4	101.6	34.1	0.5	0.3
	2103	66.9	30.2	0.8	0.3	1.0	0.9	84.3	38.0	1.0	0.4
	2107	57.7	37.7	0.8	0.2	3.1	0.5	64.5	42.2	0.9	0.2
	2109	56.9	37.8	0.6	0.3	2.9	1.5	106.6	70.8	1.2	0.6
300	Mean	65.2	30.6	0.7	0.2	2.4	0.9	83.4	40.9	0.9	0.3
	S.D.	7.5	7.0	0.2	0.1	0.9	0.5	21.0	18.8	0.3	0.2
	3101	71.8	25.0	0.6	0.1	1.8	0.7	74.5	26.0	0.6	0.1
	3102	65.6	28.9	0.8	0.2	2.7	1.8	69.2	30.4	0.9	0.2
	3103	44.9	51.2	0.6	0.2	2.6	0.6	87.5	99.9	1.1	0.3
	3104	57.9	36.7	0.8	0.3	3.6	0.8	123.4	78.3	1.7	0.6
1000	3106	67.7	27.6	1.2	0.1	2.2	1.2	57.3	23.3	1.0	0.1
	Mean	61.6	33.9	0.8	0.2	2.6	1.0	82.4	51.6	1.1	0.3
	S.D.	10.6	10.6	0.2	0.1	0.7	0.5	25.4	35.2	0.4	0.2
	4101	69.1	27.4	0.5	0.3	1.9	0.8	89.4	35.5	0.6	0.4
	4102	56.8	39.2	0.6	0.2	2.6	0.6	60.1	41.5	0.6	0.2
	4103	58.1	36.1	0.8	0.3	2.8	1.8	89.1	55.4	1.3	0.4
4106	4106	48.9	46.6	0.9	0.1	2.5	1.1	52.8	50.3	0.9	0.1
	4110	58.4	37.2	1.0	0.3	2.5	0.5	60.3	38.3	1.1	0.3
	Mean	58.3	37.3	0.8	0.2	2.5	1.0	70.3	44.2	0.9	0.3
S.D.	S.D.	7.2	6.9	0.2	0.1	0.3	0.5	17.5	8.4	0.3	0.1

LUC : Large unstained cells

Appendix 6-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual hematology (Day 14 of recovery)

Sex : Male

Dose mg/kg/day	Animal number	RBC X10 ⁴ /μL	Hb g/dL	Ht %	MCV fL	MCH pg	MCHC g/dL	Reticu- locyte %	Plate- let X10 ⁴ /μL	PT s	APTT s	Fibri- nogen mg/dL	WBC X10 ² /μL
0	1008	947	16.4	44.6	47.1	17.3	36.8	1.6	116.1	13.3	19.7	332	105.7
	1009	923	16.7	45.7	49.5	18.1	36.7	1.2	101.6	14.8	19.2	329	99.0
	1010	933	16.8	44.9	48.2	18.1	37.5	1.5	146.0	13.5	18.2	323	171.0
	1011	874	15.6	42.1	48.1	17.8	37.0	1.5	112.9	13.6	20.3	338	66.6
	1012	940	17.2	45.8	48.7	18.3	37.6	1.0	112.7	13.2	22.3	343	92.8
	Mean	923	16.5	44.6	48.3	17.9	37.1	1.4	117.9	13.7	19.9	333	107.0
1000	S.D.	29	0.6	1.5	0.9	0.4	0.4	0.3	16.7	0.6	1.5	8	38.7
	4008	887	16.3	43.1	48.6	18.4	37.8	1.2	113.3	16.2	24.7	347	105.7
	4009	858	16.4	43.2	50.4	19.1	37.9	1.3	138.2	13.3	22.9	275	131.5
	4010	916	16.1	43.4	47.4	17.5	37.0	1.8	116.7	15.4	25.2	329	83.8
	4011	887	17.3	46.1	51.9	19.4	37.5	1.9	110.8	15.1	22.4	344	83.3
	4012	881	15.9	42.5	48.3	18.1	37.4	1.1	108.6	16.9	24.0	359	85.0
	Mean	886	16.4	43.7	49.3	18.5	37.5	1.5	117.5	15.4	23.8	331	97.9
	S.D.	21	0.5	1.4	1.8	0.8	0.4	0.4	11.9	1.4	1.2	33	21.0

Appendix 6-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual hematology (Day 14 of recovery)

Sex : Male

Dose mg/kg/day	Animal number	Differential leukocyte counts (%)					Differential leukocyte counts ($\times 10^3/\mu\text{L}$)						
		Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC	Lymph.	Neut.	Eosino.	Baso.	Mono.	LUC
0	1008	79.2	15.4	1.4	0.3	2.9	0.8	83.7	16.3	1.5	0.3	3.1	0.9
	1009	72.5	23.1	1.2	0.3	2.3	0.7	71.8	22.9	1.1	0.3	2.3	0.7
	1010	73.6	21.8	1.0	0.4	2.5	0.5	126.0	37.4	1.8	0.7	4.3	0.9
	1011	71.7	24.2	1.1	0.2	2.1	0.8	47.7	16.1	0.7	0.1	1.4	0.5
	1012	78.2	18.5	0.9	0.3	1.6	0.4	72.5	17.2	0.9	0.3	1.5	0.4
	Mean	75.0	20.6	1.1	0.3	2.3	0.6	80.3	22.0	1.2	0.3	2.5	0.7
1000	S.D.	3.4	3.6	0.2	0.1	0.5	0.2	28.7	9.1	0.4	0.2	1.2	0.2
	4008	79.8	15.9	1.4	0.2	1.8	0.9	84.4	16.9	1.4	0.2	1.9	0.9
	4009	76.4	18.2	1.5	0.4	2.4	1.1	100.4	24.0	2.0	0.5	3.1	1.5
	4010	71.9	22.0	2.3	0.3	3.1	0.3	60.2	18.5	2.0	0.2	2.6	0.3
	4011	79.9	16.0	1.4	0.3	1.6	0.8	66.5	13.4	1.1	0.3	1.4	0.6
	4012	73.2	23.5	1.4	0.2	1.2	0.4	62.2	20.0	1.2	0.1	1.1	0.4
	Mean	76.2	19.1	1.6	0.3	2.0	0.7	74.7	18.6	1.5	0.3	2.0	0.7
	S.D.	3.7	3.5	0.4	0.1	0.7	0.3	17.2	3.9	0.4	0.2	0.8	0.5

LUC : Large unstained cells

Appendix 6-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual hematology (Day 14 of recovery)

Sex : Female

Dose mg/kg/day	Animal number	RBC $\times 10^4/\mu\text{L}$	Hb g/dL	Ht %	MCV fL	MCH pg	MCHC g/dL	Reticu- locyte %	Plate- let $\times 10^4/\mu\text{L}$	PT s	APTT s	Fibri- nogen mg/dL	WBC $\times 10^2/\mu\text{L}$	
0	1113	805	15.4	40.3	50.0	19.1	38.1	1.2	124.1	11.5	15.2	246	103.6	
	1114	840	16.1	42.2	50.3	19.1	38.1	1.4	133.9	11.7	17.2	246	51.1	
	1115	810	15.2	39.6	48.9	18.7	38.2	2.2	190.4	11.1	14.8	289	89.0	
	1116	766	14.3	38.0	49.7	18.7	37.7	1.0	150.4	10.0	14.4	216	49.1	
	1117	862	16.0	41.9	48.6	18.6	38.2	1.2	123.4	12.9	17.1	244	75.3	
		Mean	817	15.4	40.4	49.5	18.8	38.1	1.4	144.4	11.4	15.7	248	73.6
		S.D.	37	0.7	1.7	0.7	0.2	0.2	0.5	27.9	1.0	1.3	26	23.7
1000	4113	859	16.5	43.7	50.9	19.2	37.8	0.9	120.9	12.0	18.7	252	78.0	
	4114	835	16.3	42.4	50.9	19.5	38.3	1.2	133.3	10.9	14.5	216	71.9	
	4115	839	15.4	40.8	48.6	18.3	37.7	1.8	117.6	12.1	15.8	278	69.4	
	4116	842	16.5	44.3	52.6	19.7	37.4	1.1	120.2	11.5	15.9	226	60.8	
	4117	837	15.7	40.9	48.9	18.7	38.2	1.4	114.7	11.4	15.9	266	68.8	
		Mean	842	16.1	42.4	50.4	19.1	37.9	1.3	121.3	11.6	16.2	248	69.8
		S.D.	10	0.5	1.6	1.6	0.6	0.4	0.3	7.1	0.5	1.5	26	6.2

Appendix 6-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual hematology (Day 14 of recovery)

Sex : Female

Dose mg/kg/day	Animal number	Differential leukocyte counts (%)					Differential leukocyte counts ($\times 10^2/\mu\text{L}$)						
		Lymp.	Neut.	Eosino.	Baso.	Mono.	LUC	Lymp.	Neut.	Eosino.	Baso.	Mono.	LUC
0	1113	83.4	13.7	0.7	0.3	1.2	0.6	86.4	14.2	0.7	0.3	1.3	0.6
	1114	74.2	21.8	2.0	0.2	1.5	0.3	37.9	11.2	1.0	0.1	0.8	0.2
	1115	81.2	14.1	1.8	0.3	1.6	1.0	72.3	12.6	1.6	0.3	1.4	0.9
	1116	59.1	35.2	1.9	0.1	3.1	0.6	29.0	17.3	0.9	0.1	1.5	0.3
	1117	69.8	25.8	1.9	0.1	1.7	0.7	52.5	19.4	1.5	0.1	1.3	0.5
	Mean	73.5	22.1	1.7	0.2	1.8	0.6	55.6	14.9	1.1	0.2	1.3	0.5
1000	S.D.	9.7	8.9	0.5	0.1	0.7	0.3	23.8	3.4	0.4	0.1	0.3	0.3
	4113	81.0	13.9	2.9	0.3	1.3	0.7	63.2	10.8	2.3	0.2	1.0	0.5
	4114	69.9	26.4	1.0	0.3	2.1	0.3	50.3	19.0	0.7	0.2	1.5	0.2
	4115	73.7	22.2	1.1	0.3	1.8	0.9	51.1	15.4	0.8	0.2	1.2	0.6
	4116	77.3	17.3	2.5	0.2	2.3	0.4	47.0	10.5	1.5	0.1	1.4	0.2
	4117	74.1	21.3	1.7	0.2	1.9	0.7	51.0	14.7	1.2	0.1	1.3	0.5
	Mean	75.2	20.2	1.8	0.3	1.9	0.6	52.5	14.1	1.3	0.2	1.3	0.4
	S.D.	4.2	4.8	0.8	0.1	0.4	0.2	6.2	3.5	0.6	0.1	0.2	0.2

LUC : Large unstained cells

Appendix 7-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual blood chemistry (Week 6 of administration)

Sex : Male

Dose mg/kg/day	Animal number	AST (GOT) IU/L	ALT (GPT) IU/L	LDH IU/L	γ -GTP IU/L	A1P IU/L	T.cho mg/dL	TG mg/dL	PL mg/dL	T.bili- rubin mg/dL	Glucose mg/dL
0	1001	61	30	48	1	323	38	67	79	0.1	144
	1002	58	28	43	1	393	44	39	72	0.0	153
	1003	58	28	43	2	346	33	26	62	0.1	151
	1004	70	35	48	1	378	48	38	82	0.1	126
	1005	63	30	51	1	316	56	55	92	0.1	129
	Mean	62	30	47	1	351	44	45	77	0.1	141
100	S.D.	5	3	4	0	34	9	16	11	0.0	12
	2001	66	31	48	1	494	55	46	94	0.1	130
	2002	77	30	64	1	560	62	35	98	0.1	114
	2003	62	27	50	1	336	58	71	92	0.1	128
	2004	61	26	54	1	471	35	35	64	0.1	132
	2005	81	37	59	1	455	42	36	79	0.1	143
300	Mean	69	30	55	1	463	50	45	85	0.1	129
	S.D.	9	4	7	0	82	11	15	14	0.0	10
	3001	68	30	52	1	445	43	62	81	0.1	145
	3002	68	31	49	1	469	50	49	85	0.1	128
	3003	70	36	50	1	400	43	51	81	0.1	130
	3004	83	32	68	1	309	39	24	70	0.0	142
1000	3005	68	36	56	2	508	40	44	71	0.1	156
	Mean	71	33	55	1	426	43	46	78	0.1	140
	S.D.	7	3	8	0	76	4	14	7	0.0	11
	4001	70	27	55	1	353	57	35	90	0.0	130
	4002	63	28	74	1	529	38	43	76	0.1	144
	4003	67	30	46	1	407	52	70	88	0.1	133
4000	4004	72	25	49	1	632	33	30	65	0.1	125
	4005	65	34	43	1	391	47	33	80	0.1	130
	Mean	67	29	53	1	462	45	42	80	0.1	132
	S.D.	4	3	12	0	115	10	16	10	0.0	7

Appendix 7-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual blood chemistry (Week 6 of administration)

Sex : Male

Dose mg/kg/day	Animal number	BUN mg/dL	Crea- tinine mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	Albumin g/dL	A/G
0	1001	15	0.25	145	5.2	109	9.6	6.9	6.2	2.8	0.82
	1002	17	0.34	147	5.0	108	9.8	7.1	6.1	2.7	0.79
	1003	17	0.32	146	5.0	109	9.5	6.5	5.8	2.7	0.87
	1004	14	0.30	146	5.1	109	9.5	6.2	6.3	2.8	0.80
	1005	13	0.26	147	4.7	109	9.5	6.5	6.0	2.7	0.82
	Mean	15	0.29	146	5.0	109	9.6	6.6	6.1	2.7	0.82
100	S.D.	2	0.04	1	0.2	0	0.1	0.4	0.2	0.1	0.03
	2001	18	0.29	146	4.5	107	9.8	6.7	6.1	2.7	0.79
	2002	14	0.27	146	4.7	107	9.3	6.1	6.0	2.6	0.76
	2003	14	0.25	144	4.8	108	9.8	5.2	6.2	2.6	0.72
	2004	17	0.28	147	4.3	107	10.0	6.6	6.4	2.8	0.78
	2005	19	0.27	144	5.3	110	9.4	6.6	6.2	2.8	0.82
300	Mean	16	0.27	145	4.7	108	9.7	6.2	6.2	2.7	0.77
	S.D.	2	0.01	1	0.4	1	0.3	0.6	0.1	0.1	0.04
	3001	14	0.27	143	4.7	107	9.4	6.1	5.8	2.9	1.00
	3002	15	0.28	145	4.3	107	9.7	6.4	6.3	2.7	0.75
	3003	13	0.29	145	4.6	104	9.4	6.8	6.3	2.7	0.75
	3004	17	0.31	146	5.0	108	9.6	6.1	6.5	2.9	0.81
1000	3005	16	0.28	145	4.9	107	9.9	7.8	5.8	2.8	0.93
	Mean	15	0.29	145	4.7	107	9.6	6.6	6.1	2.8	0.85
	S.D.	2	0.02	1	0.3	2	0.2	0.7	0.3	0.1	0.11
	4001	14	0.33	146	4.7	108	9.6	6.8	6.0	2.6	0.76
	4002	18	0.37	145	4.9	107	9.4	6.9	6.2	2.7	0.77
	4003	15	0.28	146	4.8	109	9.6	6.3	6.0	2.6	0.76
1000	4004	11	0.23	147	4.5	108	9.7	6.7	6.2	2.9	0.88
	4005	16	0.28	145	4.4	110	9.6	6.0	5.8	2.6	0.81
	Mean	15	0.30	146	4.7	108	9.6	6.5	6.0	2.7	0.80
	S.D.	3	0.05	1	0.2	1	0.1	0.4	0.2	0.1	0.05

Appendix 7-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual blood chemistry (Day 5 of lactation)

Sex : Female

Dose mg/kg/day	Animal number	AST (GOT) IU/L	ALT (GPT) IU/L	LDH IU/L	γ -GTP IU/L	A1P IU/L	T.cho mg/dL	TG mg/dL	PL mg/dL	T.bili- rubin mg/dL	Glucose mg/dL
0	1101	89	52	37	1	148	62	77	127	0.1	128
	1102	105	50	57	2	221	50	25	101	0.1	116
	1104	62	45	43	1	157	52	72	108	0.0	127
	1107	83	49	46	1	180	56	32	101	0.1	103
	1111	70	42	52	1	420	51	56	101	0.1	122
	Mean	82	48	47	1	225	54	52	108	0.1	119
100	S.D.	17	4	8	0	112	5	23	11	0.0	10
	2101	73	41	48	2	206	57	63	114	0.1	112
	2102	61	46	36	1	229	45	49	90	0.1	141
	2103	89	47	54	1	191	55	26	98	0.0	108
	2107	75	38	38	1	257	49	39	95	0.1	116
	2109	81	47	66	1	132	87	46	144	0.1	121
300	Mean	76	44	48	1	203	59	45	108	0.1	120
	S.D.	10	4	12	0	47	17	14	22	0.0	13
	3101	112	72	34	2	180	60	73	118	0.1	131
	3102	74	35	33	1	223	43	49	89	0.1	115
	3103	82	50	31	1	198	63	36	120	0.1	111
	3104	76	60	52	2	253	81	68	144	0.1	131
1000	3106	72	43	33	1	225	53	81	109	0.1	134
	Mean	83	52	37	1	216	60	61	116	0.1	124
	S.D.	17	14	9	1	28	14	18	20	0.0	11
	4101	75	40	52	2	181	49	85	98	0.1	126
	4102	75	43	54	1	295	41	44	86	0.1	119
	4103	84	43	55	2	177	41	40	83	0.1	116
4106	4106	101	50	90	1	164	42	41	87	0.1	128
	4110	80	58	36	1	187	61	111	122	0.1	110
	Mean	83	47	57	1	201	47	64	95	0.1	120
	S.D.	11	7	20	1	53	9	32	16	0.0	7

Appendix 7-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual blood chemistry (Day 5 of lactation)

Sex : Female

Dose mg/kg/day	Animal number	BUN mg/dL	Crea- tinine mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	Albumin g/dL	A/G
0	1101	18	0.36	143	4.0	108	10.3	6.1	6.5	3.0	0.86
	1102	16	0.36	147	5.4	115	9.7	7.2	6.2	2.8	0.82
	1104	17	0.37	145	4.4	109	10.0	6.7	6.1	2.8	0.85
	1107	16	0.31	140	4.7	110	10.0	7.7	6.6	3.0	0.83
	1111	12	0.28	142	4.7	109	10.2	7.7	6.6	3.1	0.89
	Mean	16	0.34	143	4.6	110	10.0	7.1	6.4	2.9	0.85
100	S.D.	2	0.04	3	0.5	3	0.2	0.7	0.2	0.1	0.03
	2101	18	0.32	142	4.8	107	10.1	7.7	6.6	3.0	0.83
	2102	21	0.38	139	5.3	107	9.6	7.5	6.1	2.8	0.85
	2103	15	0.30	141	5.6	106	9.8	7.5	6.2	2.7	0.77
	2107	15	0.32	142	4.5	109	10.2	7.6	6.1	2.9	0.91
	2109	10	0.28	139	4.9	104	10.2	7.0	6.8	3.2	0.89
300	Mean	16	0.32	141	5.0	107	10.0	7.5	6.4	2.9	0.85
	S.D.	4	0.04	2	0.4	2	0.3	0.3	0.3	0.2	0.05
	3101	19	0.35	139	5.2	106	9.9	6.7	6.2	2.9	0.88
	3102	17	0.28	145	4.8	107	9.9	7.8	6.2	2.8	0.82
	3103	15	0.35	143	4.0	106	10.4	8.8	6.7	3.0	0.81
	3104	17	0.37	142	4.6	107	10.1	8.7	6.3	2.9	0.85
1000	3106	19	0.32	144	4.2	108	9.9	6.5	6.3	2.7	0.75
	Mean	17	0.33	143	4.6	107	10.0	7.7	6.3	2.9	0.82
	S.D.	2	0.04	2	0.5	1	0.2	1.1	0.2	0.1	0.05
	4101	16	0.37	142	4.0	107	9.7	6.1	6.3	2.8	0.80
	4102	15	0.32	144	4.3	110	9.9	7.1	6.1	2.9	0.91
	4103	18	0.33	142	5.0	110	10.4	7.3	6.2	2.9	0.88
4106	4106	17	0.31	144	4.4	112	9.8	6.1	5.9	2.8	0.90
	4110	18	0.31	144	4.0	108	10.4	7.7	6.5	3.0	0.86
	Mean	17	0.33	143	4.3	109	10.0	6.9	6.2	2.9	0.87
S.D.	S.D.	1	0.02	1	0.4	2	0.3	0.7	0.2	0.1	0.04

Appendix 7-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual blood chemistry (Day 14 of recovery)

Sex : Male

Dose mg/kg/day	Animal number	AST (GOT) IU/L	ALT (GPT) IU/L	LDH IU/L	γ -GTP IU/L	AlP IU/L	T.cho mg/dL	TG mg/dL	PL mg/dL	T.bili- rubin mg/dL	Glucose mg/dL
0	1008	66	30	48	1	376	34	74	73	0.1	145
	1009	61	25	65	1	333	37	60	75	0.1	141
	1010	85	40	64	1	388	44	33	75	0.1	133
	1011	70	29	53	1	427	39	37	75	0.1	159
	1012	81	37	41	1	453	48	71	93	0.1	143
	Mean	73	32	54	1	395	40	55	78	0.1	144
1000	S.D.	10	6	10	0	46	6	19	8	0.0	9
	4008	67	34	42	1	337	55	79	94	0.1	141
	4009	57	29	70	2	358	34	19	61	0.1	146
	4010	69	29	44	1	320	44	84	87	0.0	126
	4011	66	34	41	2	339	45	35	76	0.1	147
	4012	80	33	61	2	399	41	32	74	0.1	133
	Mean	68	32	52	2	351	44	50	78	0.1	139
	S.D.	8	3	13	1	30	8	30	13	0.0	9

Appendix 7-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual blood chemistry (Day 14 of recovery)

Sex : Male

Dose mg/kg/day	Animal number	BUN mg/dL	Crea- tinine mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	Albumin g/dL	A/G
0	1008	18	0.30	141	5.0	106	9.2	6.8	5.8	2.8	0.93
	1009	15	0.29	143	4.8	106	9.5	6.1	6.3	2.9	0.85
	1010	20	0.36	144	4.9	106	9.5	5.8	6.2	2.8	0.82
	1011	16	0.29	144	4.2	108	9.3	5.3	5.8	2.6	0.81
	1012	21	0.29	145	4.6	106	9.5	6.3	6.6	2.8	0.74
	Mean	18	0.31	143	4.7	106	9.4	6.1	6.1	2.8	0.83
1000	S.D.	3	0.03	2	0.3	1	0.1	0.6	0.3	0.1	0.07
	4008	13	0.35	144	4.8	105	9.3	6.0	6.0	2.8	0.88
	4009	19	0.33	144	4.8	107	9.3	6.6	6.1	2.8	0.85
	4010	17	0.31	145	5.1	108	9.4	6.1	6.3	2.6	0.70
	4011	17	0.24	146	4.8	107	9.4	6.8	6.0	2.8	0.88
	4012	18	0.32	146	4.7	108	9.4	5.8	6.3	2.7	0.75
	Mean	17	0.31	145	4.8	107	9.4	6.3	6.1	2.7	0.81
	S.D.	2	0.04	1	0.2	1	0.1	0.4	0.2	0.1	0.08

Appendix 7-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual blood chemistry (Day 14 of recovery)

Sex : Female

Dose mg/kg/day	Animal number	AST (GOT) IU/L	ALT (GPT) IU/L	LDH IU/L	γ -GTP IU/L	A1P IU/L	T.cho mg/dL	TG mg/dL	PL mg/dL	T.bili- rubin mg/dL	Glucose mg/dL
0	1113	59	26	41	1	184	85	45	176	0.1	119
	1114	64	25	34	2	134	72	21	141	0.0	123
	1115	64	29	47	2	169	41	22	87	0.1	120
	1116	77	51	49	1	108	109	44	200	0.1	111
	1117	64	26	38	2	268	51	16	106	0.1	113
	Mean	66	31	42	2	173	72	30	142	0.1	117
1000	S.D.	7	11	6	1	61	27	14	47	0.0	5
	4113	58	18	29	1	123	38	8	79	0.1	105
	4114	55	25	35	1	133	60	16	116	0.1	117
	4115	71	28	37	2	190	97	22	156	0.1	138
	4116	53	22	23	2	186	47	18	90	0.1	110
	4117	73	33	59	2	379	55	17	115	0.1	155
	Mean	62	25	37	2	202	59	16	111	0.1	125
	S.D.	9	6	14	1	103	23	5	30	0.0	21

Appendix 7-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual blood chemistry (Day 14 of recovery)

Sex : Female

Dose mg/kg/day	Animal number	BUN mg/dL	Crea- tinine mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	Albumin g/dL	A/G
0	1113	16	0.32	142	4.5	109	10.1	5.2	7.1	3.6	1.03
	1114	20	0.39	145	4.0	112	9.4	3.9	7.0	3.2	0.84
	1115	20	0.38	143	4.9	110	9.6	5.7	6.4	2.7	0.73
	1116	19	0.32	143	4.3	107	10.0	4.7	7.6	3.8	1.00
	1117	24	0.42	144	4.5	112	9.5	5.9	6.3	3.2	1.03
	Mean	20	0.37	143	4.4	110	9.7	5.1	6.9	3.3	0.93
1000	S.D.	3	0.04	1	0.3	2	0.3	0.8	0.5	0.4	0.14
	4113	20	0.47	143	4.6	110	9.1	5.0	6.3	2.9	0.85
	4114	17	0.36	142	4.5	111	9.6	5.3	6.9	3.2	0.86
	4115	20	0.39	143	4.0	109	9.5	4.9	6.7	3.0	0.81
	4116	24	0.46	144	4.6	110	9.5	5.5	6.2	3.0	0.94
	4117	18	0.39	143	4.0	112	9.2	5.4	6.1	3.0	0.97
	Mean	20	0.41	143	4.3	110	9.4	5.2	6.4	3.0	0.89
	S.D.	3	0.05	1	0.3	1	0.2	0.3	0.3	0.1	0.07

Appendix 8-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 0

	Animal number	Body weight g	Brain g(g/100g BW)	Thyroid (R) mg(mg/100g BW)	Thyroid (L) mg(mg/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
Absolute	1001	473	2.13	9.8	10.9	20.7	365	1.32	12.33
	1002	494	2.02	15.7	15.7	31.4	336	1.39	13.08
	1003	465	2.17	13.0	9.6	22.6	321	1.40	11.63
	1004	441	2.05	11.4	12.3	23.7	221	1.35	12.69
	1005	508	2.17	10.9	10.7	21.6	427	1.43	13.68
	Mean	476	2.11	12.2	11.8	24.0	334	1.38	12.68
Relative	S.D.	26	0.07	2.3	2.4	4.3	75	0.04	0.77
	1001		0.45	2.1	2.3	4.4	77	0.28	2.61
	1002		0.41	3.2	3.2	6.4	68	0.28	2.65
	1003		0.47	2.8	2.1	4.9	69	0.30	2.50
	1004		0.46	2.6	2.8	5.4	50	0.31	2.88
	1005		0.43	2.1	2.1	4.3	84	0.28	2.69
	Mean		0.44	2.6	2.5	5.1	70	0.29	2.67
	S.D.		0.02	0.5	0.5	0.9	13	0.01	0.14

Appendix 8-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 0

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)	
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	
Absolute	1001	0.64	1.54	1.49	3.03	29	31	60
	1002	0.82	1.46	1.54	3.00	26	29	55
	1003	0.73	1.47	1.41	2.88	24	25	49
	1004	0.82	1.38	1.53	2.91	22	27	49
	1005	0.96	1.75	1.85	3.60	36	38	74
	Mean	0.79	1.52	1.56	3.08	27	30	57
Relative	S.D.	0.12	0.14	0.17	0.30	5	5	10
	1001	0.14	0.33	0.32	0.64	6	7	13
	1002	0.17	0.30	0.31	0.61	5	6	11
	1003	0.16	0.32	0.30	0.62	5	5	11
	1004	0.19	0.31	0.35	0.66	5	6	11
	1005	0.19	0.34	0.36	0.71	7	7	15
	Mean	0.17	0.32	0.33	0.65	6	6	12
	S.D.	0.02	0.02	0.03	0.04	1	1	2

Appendix 8-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 0

Animal number	Body weight	Testis (R)	Testis (L)	Testis (R+L)	Epididymis (R)	Epididymis (L)	Epididymis (R+L)	
	g	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	
Absolute	1001	473	1.52	1.47	2.99	682	665	1347
	1002	494	1.66	1.65	3.31	645	612	1257
	1003	465	1.60	1.66	3.26	608	599	1207
	1004	441	1.67	1.62	3.29	610	621	1231
	1005	508	1.63	1.69	3.32	648	657	1305
	1006	462	1.64	1.65	3.29	613	630	1243
	1007	453	1.69	1.73	3.42	708	709	1417
Mean		471	1.63	1.64	3.27	645	642	1287
S.D.		23	0.06	0.08	0.13	39	38	74
Relative	1001		0.32	0.31	0.63	144	141	285
	1002		0.34	0.33	0.67	131	124	254
	1003		0.34	0.36	0.70	131	129	260
	1004		0.38	0.37	0.75	138	141	279
	1005		0.32	0.33	0.65	128	129	257
	1006		0.35	0.36	0.71	133	136	269
	1007		0.37	0.38	0.75	156	157	313
Mean			0.35	0.35	0.69	137	137	274
S.D.			0.02	0.03	0.05	10	11	21

Appendix 8-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 100

	Animal number	Body weight g	Brain g(g/100g BW)	Thyroid (R) mg(mg/100g BW)	Thyroid (L) mg(mg/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
Absolute	2001	482	2.10	13.0	14.2	27.2	329	1.46	13.38
	2002	482	2.33	14.0	10.9	24.9	390	1.41	11.82
	2003	449	2.01	13.7	12.4	26.1	299	1.24	12.59
	2004	455	2.16	10.9	8.3	19.2	232	1.18	12.21
	2005	435	2.17	11.4	12.4	23.8	306	1.28	11.13
	Mean	461	2.15	12.6	11.6	24.2	311	1.31	12.23
Relative	S.D.	21	0.12	1.4	2.2	3.1	57	0.12	0.84
	2001		0.44	2.7	2.9	5.6	68	0.30	2.78
	2002		0.48	2.9	2.3	5.2	81	0.29	2.45
	2003		0.45	3.1	2.8	5.8	67	0.28	2.80
	2004		0.47	2.4	1.8	4.2	51	0.26	2.68
	2005		0.50	2.6	2.9	5.5	70	0.29	2.56
	Mean		0.47	2.7	2.5	5.3	67	0.28	2.65
	S.D.		0.02	0.3	0.5	0.6	11	0.02	0.15

Appendix 8-5

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 100

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)
Absolute	2001	0.87	1.64	1.74	3.38	26	27
	2002	0.90	1.55	1.60	3.15	29	33
	2003	0.63	1.55	1.60	3.15	28	30
	2004	0.83	1.61	1.59	3.20	34	33
	2005	0.81	1.35	1.41	2.76	29	28
	Mean	0.81	1.54	1.59	3.13	29	30
Relative	S.D.	0.11	0.11	0.12	0.23	3	5
	2001	0.18	0.34	0.36	0.70	5	6
	2002	0.19	0.32	0.33	0.65	6	7
	2003	0.14	0.35	0.36	0.70	6	7
	2004	0.18	0.35	0.35	0.70	7	7
	2005	0.19	0.31	0.32	0.63	7	6
	Mean	0.18	0.33	0.34	0.68	6	7
	S.D.	0.02	0.02	0.02	0.03	1	1

Appendix 8-6

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 100

Animal number	Body weight g	Testis (R) g(g/100g BW)	Testis (L) g(g/100g BW)	Testis (R+L) g(g/100g BW)	Epididymis (R) mg(mg/100g BW)	Epididymis (L) mg(mg/100g BW)	Epididymis (R+L) mg(mg/100g BW)	
Absolute	2001	482	1.53	1.59	3.12	654	676	1330
	2002	482	1.71	1.64	3.35	695	694	1389
	2003	449	1.36	1.40	2.76	584	580	1164
	2004	455	1.93	1.88	3.81	687	665	1352
	2005	435	1.46	1.41	2.87	695	754	1449
	2006	525	1.76	1.72	3.48	693	701	1394
	2007	451	1.49	1.46	2.95	613	614	1227
	2008	438	1.59	1.60	3.19	576	581	1157
	2009	463	1.66	1.69	3.35	649	684	1333
	2010	477	1.64	1.60	3.24	613	609	1222
	2011	457	1.53	1.50	3.03	623	582	1205
	2012	489	1.60	1.64	3.24	660	645	1305
Mean		467	1.61	1.59	3.20	645	649	1294
S.D.		25	0.15	0.14	0.29	43	56	97
Relative	2001	0.32	0.33	0.65	136	140	276	
	2002	0.35	0.34	0.70	144	144	288	
	2003	0.30	0.31	0.61	130	129	259	
	2004	0.42	0.41	0.84	151	146	297	
	2005	0.34	0.32	0.66	160	173	333	
	2006	0.34	0.33	0.66	132	134	266	
	2007	0.33	0.32	0.65	136	136	272	
	2008	0.36	0.37	0.73	132	133	264	
	2009	0.36	0.37	0.72	140	148	288	
	2010	0.34	0.34	0.68	129	128	256	
	2011	0.33	0.33	0.66	136	127	264	
	2012	0.33	0.34	0.66	135	132	267	
Mean		0.34	0.34	0.69	138	139	278	
S.D.		0.03	0.03	0.06	9	13	22	

Appendix 8-7

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 300

Animal number	Body weight g	Brain		Thyroid (R)		Thyroid (L)		Thyroid (R+L)		Thymus		Heart		Liver	
		g(g/100g BW)	mg(mg/100g BW)	g(g/100g BW)											
Absolute	3001	410	2.10	10.2	10.1	20.3	274	1.24	10.93						
	3002	492	2.12	9.3	8.5	17.8	335	1.40	13.54						
	3003	423	2.00	11.7	11.8	23.5	263	1.16	11.65						
	3004	457	2.11	9.5	10.3	19.8	193	1.30	12.06						
	3005	473	1.97	10.0	12.7	22.7	308	1.22	11.56						
	Mean	451	2.06	10.1	10.7	20.8	275	1.26	11.95						
Relative	S.D.	34	0.07	0.9	1.6	2.3	54	0.09	0.98						
	3001		0.51	2.5	2.5	5.0	67	0.30	2.67						
	3002		0.43	1.9	1.7	3.6	68	0.28	2.75						
	3003		0.47	2.8	2.8	5.6	62	0.27	2.75						
	3004		0.46	2.1	2.3	4.3	42	0.28	2.64						
	3005		0.42	2.1	2.7	4.8	65	0.26	2.44						
	Mean		0.46	2.3	2.4	4.7	61	0.28	2.65						
	S.D.		0.04	0.4	0.4	0.8	11	0.01	0.13						

Appendix 8-8

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 300

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)	
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	
Absolute	3001	0.70	1.51	1.42	2.93	27	32	59
	3002	0.69	1.61	1.80	3.41	28	34	62
	3003	0.71	1.61	1.52	3.13	30	34	64
	3004	0.70	1.41	1.54	2.95	32	36	68
	3005	0.70	1.53	1.58	3.11	31	33	64
	Mean	0.70	1.53	1.57	3.11	30	34	63
Relative	S.D.	0.01	0.08	0.14	0.19	2	1	3
	3001	0.17	0.37	0.35	0.71	7	8	14
	3002	0.14	0.33	0.37	0.69	6	7	13
	3003	0.17	0.38	0.36	0.74	7	8	15
	3004	0.15	0.31	0.34	0.65	7	8	15
	3005	0.15	0.32	0.33	0.66	7	7	14
	Mean	0.16	0.34	0.35	0.69	7	8	14
	S.D.	0.01	0.03	0.02	0.04	0	1	1

Appendix 8-9

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 300

Animal number	Body weight g	Testis (R) g(g/100g BW)	Testis (L) g(g/100g BW)	Testis (R+L) g(g/100g BW)	Epididymis (R) mg(mg/100g BW)	Epididymis (L) mg(mg/100g BW)	Epididymis (R+L) mg(mg/100g BW)
Absolute	3001	410	1.51	1.51	3.02	626	628
	3002	492	1.61	1.56	3.17	585	632
	3003	423	1.46	1.05	2.51	654	354
	3004	457	1.67	1.67	3.34	628	614
	3005	473	1.79	1.84	3.63	583	581
	3006	462	1.95	1.87	3.82	761	770
	3007	508	1.46	1.55	3.01	522	601
	3008	471	1.79	1.76	3.55	805	805
	3009	475	1.70	1.63	3.33	689	636
	3010	476	1.57	1.55	3.12	655	604
	3011	428	1.57	1.60	3.17	649	648
	3012	436	1.72	1.75	3.47	630	662
Mean		459	1.65	1.61	3.26	649	628
S.D.		30	0.15	0.21	0.34	77	110
Relative							
Relative	3001		0.37	0.37	0.74	153	153
	3002		0.33	0.32	0.64	119	128
	3003		0.35	0.25	0.59	155	84
	3004		0.37	0.37	0.73	137	134
	3005		0.38	0.39	0.77	123	123
	3006		0.42	0.40	0.83	165	167
	3007		0.29	0.31	0.59	103	118
	3008		0.38	0.37	0.75	171	171
	3009		0.36	0.34	0.70	145	134
	3010		0.33	0.33	0.66	138	127
	3011		0.37	0.37	0.74	152	151
	3012		0.39	0.40	0.80	144	152
Mean			0.36	0.35	0.71	142	137
S.D.			0.03	0.04	0.08	20	24

Appendix 8-10

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 1000

	Animal number	Body weight g	Brain g(g/100g BW)	Thyroid (R) mg(mg/100g BW)	Thyroid (L) mg(mg/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
Absolute	4001	482	2.13	9.7	10.7	20.4	411	1.30	12.25
	4002	436	2.04	10.1	9.9	20.0	303	1.32	11.74
	4003	502	2.20	13.6	12.7	26.3	442	1.46	14.00
	4004	443	2.11	8.9	10.7	19.6	368	1.33	11.29
	4005	477	2.08	13.8	11.9	25.7	322	1.31	12.95
	Mean	468	2.11	11.2	11.2	22.4	369	1.34	12.45
Relative	S.D.	28	0.06	2.3	1.1	3.3	58	0.07	1.07
	4001		0.44	2.0	2.2	4.2	85	0.27	2.54
	4002		0.47	2.3	2.3	4.6	69	0.30	2.69
	4003		0.44	2.7	2.5	5.2	88	0.29	2.79
	4004		0.48	2.0	2.4	4.4	83	0.30	2.55
	4005		0.44	2.9	2.5	5.4	68	0.27	2.71
	Mean		0.45	2.4	2.4	4.8	79	0.29	2.66
	S.D.		0.02	0.4	0.1	0.5	9	0.02	0.11

Appendix 8-11

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 1000

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)	
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	
Absolute	4001	0.93	1.47	1.54	3.01	28	31	59
	4002	0.84	1.35	1.39	2.74	27	30	57
	4003	0.95	1.68	1.72	3.40	34	36	70
	4004	0.77	1.79	1.76	3.55	32	36	68
	4005	0.77	1.74	1.91	3.65	31	32	63
	Mean	0.85	1.61	1.66	3.27	30	33	63
Relative	S.D.	0.09	0.19	0.20	0.38	3	3	6
	4001	0.19	0.30	0.32	0.62	6	6	12
	4002	0.19	0.31	0.32	0.63	6	7	13
	4003	0.19	0.33	0.34	0.68	7	7	14
	4004	0.17	0.40	0.40	0.80	7	8	15
	4005	0.16	0.36	0.40	0.77	6	7	13
	Mean	0.18	0.34	0.36	0.70	6	7	13
	S.D.	0.01	0.04	0.04	0.08	1	1	1

Appendix 8-12

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Main group)

Dose (mg/kg/day): 1000

	Animal number	Body weight g	Testis (R) g(g/100g BW)	Testis (L) g(g/100g BW)	Testis (R+L) g(g/100g BW)	Epididymis (R) mg(mg/100g BW)	Epididymis (L) mg(mg/100g BW)	Epididymis (R+L) mg(mg/100g BW)
Absolute	4001	482	1.66	1.64	3.30	627	605	1232
	4002	436	1.73	1.67	3.40	596	569	1165
	4003	502	1.70	1.74	3.44	653	639	1292
	4004	443	1.68	1.67	3.35	684	676	1360
	4005	477	1.51	1.49	3.00	596	606	1202
	4006	484	1.82	1.77	3.59	725	663	1388
	4007	498	1.63	1.66	3.29	669	674	1343
Mean		475	1.68	1.66	3.34	650	633	1283
S.D.		26	0.10	0.09	0.18	47	41	85
Relative	4001		0.34	0.34	0.68	130	126	256
	4002		0.40	0.38	0.78	137	131	267
	4003		0.34	0.35	0.69	130	127	257
	4004		0.38	0.38	0.76	154	153	307
	4005		0.32	0.31	0.63	125	127	252
	4006		0.38	0.37	0.74	150	137	287
	4007		0.33	0.33	0.66	134	135	270
Mean			0.36	0.35	0.71	137	134	271
S.D.			0.03	0.03	0.06	11	9	20

Appendix 8-13

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of female rats (Main group)

Dose (mg/kg/day): 0

	Animal number	Body weight g	Brain g(g/100g BW)	Thyroid (R) mg(mg/100g BW)	Thyroid (L) mg(mg/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
Absolute	1101	331	2.05	9.5	10.1	19.6	261	1.01	10.82
	1102	275	1.93	8.7	9.3	18.0	158	0.84	8.88
	1104	301	1.85	8.4	6.9	15.3	208	0.93	10.42
	1107	299	1.91	14.0	11.6	25.6	277	0.95	9.64
	1111	269	1.88	8.3	7.3	15.6	143	0.91	9.55
	Mean	295	1.92	9.8	9.0	18.8	209	0.93	9.86
Relative	S.D.	25	0.08	2.4	2.0	4.2	60	0.06	0.76
	1101		0.62	2.9	3.1	5.9	79	0.31	3.27
	1102		0.70	3.2	3.4	6.5	57	0.31	3.23
	1104		0.61	2.8	2.3	5.1	69	0.31	3.46
	1107		0.64	4.7	3.9	8.6	93	0.32	3.22
	1111		0.70	3.1	2.7	5.8	53	0.34	3.55
	Mean		0.65	3.3	3.1	6.4	70	0.32	3.35
	S.D.		0.04	0.8	0.6	1.3	16	0.01	0.15

Appendix 8-14

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of female rats (Main group)

Dose (mg/kg/day): 0

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)
Absolute	1101	0.71	1.06	1.16	2.22	43	48
	1102	0.55	1.02	1.01	2.03	37	42
	1104	0.75	0.99	0.97	1.96	32	35
	1107	0.83	1.04	1.04	2.08	42	47
	1111	0.67	0.92	0.92	1.84	38	39
	Mean	0.70	1.01	1.02	2.03	38	42
	S.D.	0.10	0.05	0.09	0.14	4	5
Relative	1101	0.21	0.32	0.35	0.67	13	15
	1102	0.20	0.37	0.37	0.74	13	15
	1104	0.25	0.33	0.32	0.65	11	12
	1107	0.28	0.35	0.35	0.70	14	16
	1111	0.25	0.34	0.34	0.68	14	14
	Mean	0.24	0.34	0.35	0.69	13	14
	S.D.	0.03	0.02	0.02	0.03	1	2

Appendix 8-15

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of female rats (Main group)

Dose (mg/kg/day): 100

	Animal number	Body weight g	Brain g(g/100g BW)	Thyroid (R) mg(mg/100g BW)	Thyroid (L) mg(mg/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
Absolute	2101	322	2.00	9.7	8.5	18.2	140	0.89	10.12
	2102	304	2.04	9.4	8.0	17.4	282	0.92	10.69
	2103	334	2.08	7.1	9.5	16.6	258	1.12	10.04
	2107	305	1.88	10.8	9.8	20.6	257	0.95	9.38
	2109	345	1.95	10.4	11.8	22.2	239	1.02	10.37
	Mean	322	1.99	9.5	9.5	19.0	235	0.98	10.12
	S.D.	18	0.08	1.4	1.5	2.3	55	0.09	0.49
Relative	2101		0.62	3.0	2.6	5.7	43	0.28	3.14
	2102		0.67	3.1	2.6	5.7	93	0.30	3.52
	2103		0.62	2.1	2.8	5.0	77	0.34	3.01
	2107		0.62	3.5	3.2	6.8	84	0.31	3.08
	2109		0.57	3.0	3.4	6.4	69	0.30	3.01
	Mean		0.62	2.9	2.9	5.9	73	0.31	3.15
	S.D.		0.04	0.5	0.4	0.7	19	0.02	0.21

Appendix 8-16

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual organ weight of female rats (Main group)

Dose (mg/kg/day): 100

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)	
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	
Absolute	2101	0.74	1.13	1.08	2.21	37	38	75
	2102	0.92	1.02	1.05	2.07	47	47	94
	2103	0.83	1.18	1.20	2.38	57	56	113
	2107	0.88	1.08	1.09	2.17	33	36	69
	2109	0.69	1.22	1.13	2.35	42	49	91
	Mean	0.81	1.13	1.11	2.24	43	45	88
Relative	S.D.	0.10	0.08	0.06	0.13	9	8	17
	2101	0.23	0.35	0.34	0.69	11	12	23
	2102	0.30	0.34	0.35	0.68	15	15	31
	2103	0.25	0.35	0.36	0.71	17	17	34
	2107	0.29	0.35	0.36	0.71	11	12	23
	2109	0.20	0.35	0.33	0.68	12	14	26
	Mean	0.25	0.35	0.35	0.69	13	14	27
	S.D.	0.04	0.00	0.01	0.02	3	2	5

Appendix 8-17

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of female rats (Main group)

Dose (mg/kg/day): 300

Animal number	Body weight g	Brain g(g/100g BW)	Thyroid (R) mg(mg/100g BW)	Thyroid (L) mg(mg/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
Absolute	3101	279	1.91	6.7	8.7	15.4	130	0.88
	3102	312	1.99	7.8	7.9	15.7	310	1.03
	3103	297	1.99	8.1	7.1	15.2	232	0.99
	3104	342	1.96	9.3	10.2	19.5	205	1.01
	3106	306	2.00	9.9	10.3	20.2	244	1.00
	Mean	307	1.97	8.4	8.8	17.2	224	0.98
	S.D.	23	0.04	1.3	1.4	2.4	65	0.06
Relative	3101		0.68	2.4	3.1	5.5	47	0.32
	3102		0.64	2.5	2.5	5.0	99	0.33
	3103		0.67	2.7	2.4	5.1	78	0.33
	3104		0.57	2.7	3.0	5.7	60	0.30
	3106		0.65	3.2	3.4	6.6	80	0.33
	Mean		0.64	2.7	2.9	5.6	73	0.32
	S.D.		0.04	0.3	0.4	0.6	20	0.01

Appendix 8-18

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of female rats (Main group)

Dose (mg/kg/day): 300

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)	
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	
Absolute	3101	0.54	0.98	1.02	2.00	33	36	69
	3102	0.79	1.14	1.12	2.26	43	45	88
	3103	0.75	0.97	1.05	2.02	46	47	93
	3104	0.71	1.14	1.07	2.21	44	52	96
	3106	0.80	1.18	1.12	2.30	40	44	84
	Mean	0.72	1.08	1.08	2.16	41	45	86
Relative	S.D.	0.11	0.10	0.04	0.14	5	6	11
	3101	0.19	0.35	0.37	0.72	12	13	25
	3102	0.25	0.37	0.36	0.72	14	14	28
	3103	0.25	0.33	0.35	0.68	15	16	31
	3104	0.21	0.33	0.31	0.65	13	15	28
	3106	0.26	0.39	0.37	0.75	13	14	27
	Mean	0.23	0.35	0.35	0.70	13	14	28
	S.D.	0.03	0.03	0.02	0.04	1	1	2

Appendix 8-19

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual organ weight of female rats (Main group)

Dose (mg/kg/day): 1000

Animal number	Body weight g	Brain g(g/100g BW)	Thyroid (R) mg(mg/100g BW)	Thyroid (L) mg(mg/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
Absolute	4101	310	1.96	8.4	6.2	14.6	358	0.95
	4102	289	1.95	10.3	9.1	19.4	190	0.92
	4103	322	1.98	11.4	9.4	20.8	205	1.08
	4106	290	2.16	9.3	11.3	20.6	159	0.86
	4110	306	1.91	7.5	7.7	15.2	176	1.00
	Mean	303	1.99	9.4	8.7	18.1	218	0.96
Relative	S.D.	14	0.10	1.5	1.9	3.0	80	0.61
	4101		0.63	2.7	2.0	4.7	115	0.31
	4102		0.67	3.6	3.1	6.7	66	0.32
	4103		0.61	3.5	2.9	6.5	64	0.34
	4106		0.74	3.2	3.9	7.1	55	0.30
	4110		0.62	2.5	2.5	5.0	58	0.33
	Mean		0.65	3.1	2.9	6.0	72	0.32
	S.D.		0.05	0.5	0.7	1.1	25	0.11

Appendix 8-20

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of female rats (Main group)

Dose (mg/kg/day): 1000

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)	
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	
Absolute	4101	0.83	1.10	1.03	2.13	47	49	96
	4102	0.73	1.07	1.09	2.16	38	46	84
	4103	0.77	1.18	1.13	2.31	46	51	97
	4106	0.57	1.00	1.04	2.04	35	40	75
	4110	0.68	1.10	1.00	2.10	46	55	101
	Mean	0.72	1.09	1.06	2.15	42	48	91
Relative	S.D.	0.10	0.06	0.05	0.10	6	6	11
	4101	0.27	0.35	0.33	0.69	15	16	31
	4102	0.25	0.37	0.38	0.75	13	16	29
	4103	0.24	0.37	0.35	0.72	14	16	30
	4106	0.20	0.34	0.36	0.70	12	14	26
	4110	0.22	0.36	0.33	0.69	15	18	33
	Mean	0.24	0.36	0.35	0.71	14	16	30
	S.D.	0.03	0.01	0.02	0.03	1	1	3

Appendix 8-21

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual organ weight of male rats (Recovery group)

Dose (mg/kg/day): 0

Animal number	Body weight g	Brain		Thyroid (R)		Thyroid (L)		Thyroid (R+L)		Thymus		Heart		Liver	
		g(g/100g BW)	mg(mg/100g BW)	g(g/100g BW)											
Absolute	1008	487	2.02	12.1	9.7	21.8	230	1.29	11.89						
	1009	498	2.08	9.5	12.8	22.3	194	1.39	13.91						
	1010	532	2.18	11.9	10.8	22.7	273	1.45	13.13						
	1011	421	1.93	12.8	10.2	23.0	261	1.27	10.63						
	1012	472	2.05	11.5	11.4	22.9	289	1.32	12.62						
	Mean	482	2.05	11.6	11.0	22.5	249	1.34	12.44						
Relative	S.D.	41	0.09	1.2	1.2	0.5	38	0.07	1.25						
	1008		0.41	2.5	2.0	4.5	47	0.26	2.44						
	1009		0.42	1.9	2.6	4.5	39	0.28	2.79						
	1010		0.41	2.2	2.0	4.3	51	0.27	2.47						
	1011		0.46	3.0	2.4	5.5	62	0.30	2.52						
	1012		0.43	2.4	2.4	4.9	61	0.28	2.67						
	Mean		0.43	2.4	2.3	4.7	52	0.28	2.58						
	S.D.		0.02	0.4	0.3	0.5	10	0.01	0.15						

Appendix 8-22

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual organ weight of male rats (Recovery group)

Dose (mg/kg/day): 0

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)
Absolute	1008	0.78	1.58	1.75	3.33	28	28
	1009	0.68	1.69	1.77	3.46	27	29
	1010	0.95	1.70	1.72	3.42	31	34
	1011	0.64	1.33	1.43	2.76	25	26
	1012	0.75	1.51	1.55	3.06	26	25
	Mean	0.76	1.56	1.64	3.21	27	28
Relative	S.D.	0.12	0.15	0.15	0.29	2	4
	1008	0.16	0.32	0.36	0.68	6	6
	1009	0.14	0.34	0.36	0.69	5	6
	1010	0.18	0.32	0.32	0.64	6	6
	1011	0.15	0.32	0.34	0.66	6	6
	1012	0.16	0.32	0.33	0.65	6	5
	Mean	0.16	0.32	0.34	0.66	6	11
	S.D.	0.01	0.01	0.02	0.02	0	1

Appendix 8-23

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual organ weight of male rats (Recovery group)

Dose (mg/kg/day): 0

Animal number	Testis (R)	Testis (L)	Testis (R+L)	Epididymis (R)	Epididymis (L)	Epididymis (R+L)
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)
Absolute	1008	1.70	1.66	3.36	617	598
	1009	1.71	1.72	3.43	640	634
	1010	1.52	1.57	3.09	663	693
	1011	1.32	1.33	2.65	634	626
	1012	1.61	1.60	3.21	592	631
	Mean	1.57	1.58	3.15	629	636
Relative	S.D.	0.16	0.15	0.31	27	35
	1008	0.35	0.34	0.69	127	123
	1009	0.34	0.35	0.69	129	127
	1010	0.29	0.30	0.58	125	130
	1011	0.31	0.32	0.63	151	149
	1012	0.34	0.34	0.68	125	134
	Mean	0.33	0.33	0.65	131	133
	S.D.	0.03	0.02	0.05	11	10
						264
						20

Appendix 8-24

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual organ weight of male rats (Recovery group)

Dose (mg/kg/day): 1000

	Animal number	Body weight g	Brain g(g/100g BW)	Thyroid (R) mg(mg/100g BW)	Thyroid (L) mg(mg/100g BW)	Thyroid (R+L) mg(mg/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)
Absolute	4008	493	2.07	10.7	9.8	20.5	325	1.35	11.59
	4009	473	2.10	11.7	11.3	23.0	184	1.23	11.70
	4010	502	2.15	11.1	9.3	20.4	169	1.35	12.53
	4011	523	2.08	11.9	10.9	22.8	314	1.54	14.39
	4012	463	2.13	11.4	11.0	22.4	201	1.29	10.52
	Mean	491	2.11	11.4	10.5	21.8	239	1.35	12.15
Relative	S.D.	24	0.03	0.5	0.9	1.3	75	0.12	1.44
	4008		0.42	2.2	2.0	4.2	66	0.27	2.35
	4009		0.44	2.5	2.4	4.9	39	0.26	2.47
	4010		0.43	2.2	1.9	4.1	34	0.27	2.50
	4011		0.40	2.3	2.1	4.4	60	0.29	2.75
	4012		0.46	2.5	2.4	4.8	43	0.28	2.27
	Mean		0.43	2.3	2.2	4.5	48	0.27	2.47
	S.D.		0.02	0.2	0.2	0.4	14	0.01	0.18

Appendix 8-25

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual organ weight of male rats (Recovery group)

Dose (mg/kg/day): 1000

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)	
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	
Absolute	4008	0.59	1.46	1.54	3.00	29	31	60
	4009	0.63	1.35	1.45	2.80	30	31	61
	4010	0.72	1.61	1.62	3.23	32	34	66
	4011	0.80	1.96	1.92	3.88	35	36	71
	4012	0.64	1.58	1.61	3.19	33	37	70
	Mean	0.68	1.59	1.63	3.22	32	34	66
Relative	S.D.	0.08	0.23	0.18	0.41	2	3	5
	4008	0.12	0.30	0.31	0.61	6	6	12
	4009	0.13	0.29	0.31	0.59	6	7	13
	4010	0.14	0.32	0.32	0.64	6	7	13
	4011	0.15	0.37	0.37	0.74	7	7	14
	4012	0.14	0.34	0.35	0.69	7	8	15
	Mean	0.14	0.32	0.33	0.65	6	7	13
	S.D.	0.01	0.03	0.03	0.06	1	1	1

Appendix 8-26

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual organ weight of male rats (Recovery group)

Dose (mg/kg/day): 1000

Animal number	Testis (R)	Testis (L)	Testis (R+L)	Epididymis (R)	Epididymis (L)	Epididymis (R+L)
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)
Absolute	4008	1.59	1.58	3.17	717	670
	4009	1.72	1.70	3.42	686	691
	4010	1.55	1.51	3.06	656	610
	4011	1.92	1.84	3.76	688	674
	4012	1.55	1.58	3.13	652	663
	Mean	1.67	1.64	3.31	680	662
	S.D.	0.16	0.13	0.29	27	31
						50
Relative	4008	0.32	0.32	0.64	145	136
	4009	0.36	0.36	0.72	145	146
	4010	0.31	0.30	0.61	131	122
	4011	0.37	0.35	0.72	132	129
	4012	0.33	0.34	0.68	141	143
	Mean	0.34	0.33	0.67	139	135
	S.D.	0.03	0.02	0.05	7	10
						17

Appendix 8-27

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual organ weight of female rats (Recovery group)

Dose (mg/kg/day): 0

Animal number	Body weight g	Brain	Thyroid (R)	Thyroid (L)	Thyroid (R+L)	Thymus	Heart	Liver
		g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	g(g/100g BW)	g(g/100g BW)
Absolute	1113	285	1.85	8.1	5.3	13.4	217	0.89
	1114	265	1.81	6.9	7.0	13.9	158	0.82
	1115	317	2.05	10.7	10.9	21.6	241	0.85
	1116	316	2.04	10.1	8.7	18.8	271	1.08
	1117	295	1.97	8.1	8.1	16.2	335	0.83
	Mean	296	1.94	8.8	8.0	16.8	244	0.89
	S.D.	22	0.11	1.6	2.1	3.4	65	0.11
Relative	1113		0.65	2.8	1.9	4.7	76	0.31
	1114		0.68	2.6	2.6	5.2	60	0.31
	1115		0.65	3.4	3.4	6.8	76	0.27
	1116		0.65	3.2	2.8	5.9	86	0.34
	1117		0.67	2.7	2.7	5.5	114	0.28
	Mean		0.66	2.9	2.7	5.6	82	0.30
	S.D.		0.01	0.3	0.5	0.8	20	0.03

Appendix 8-28

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual organ weight of female rats (Recovery group)

Dose (mg/kg/day): 0

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)
Absolute	1113	0.49	0.98	1.03	2.01	30	29
	1114	0.48	0.89	0.89	1.78	36	39
	1115	0.78	0.99	1.05	2.04	43	45
	1116	0.70	1.22	1.18	2.40	39	43
	1117	0.61	0.96	0.96	1.92	49	53
	Mean	0.61	1.01	1.02	2.03	39	42
	S.D.	0.13	0.12	0.11	0.23	7	9
Relative	1113	0.17	0.34	0.36	0.71	11	10
	1114	0.18	0.34	0.34	0.67	14	15
	1115	0.25	0.31	0.33	0.64	14	14
	1116	0.22	0.39	0.37	0.76	12	14
	1117	0.21	0.33	0.33	0.65	17	18
	Mean	0.21	0.34	0.35	0.69	14	14
	S.D.	0.03	0.03	0.02	0.05	2	3

Appendix 8-29

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual organ weight of female rats (Recovery group)

Dose (mg/kg/day): 1000

Animal number	Body weight g	Brain	Thyroid (R)	Thyroid (L)	Thyroid (R+L)	Thymus	Heart	Liver
		g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	g(g/100g BW)	g(g/100g BW)
Absolute	4113	287	1.99	5.8	7.5	13.3	211	0.82
	4114	280	1.95	7.4	10.3	17.7	172	0.86
	4115	296	1.96	9.5	9.3	18.8	305	1.01
	4116	294	1.88	8.2	8.4	16.6	242	0.92
	4117	326	1.93	8.5	8.1	16.6	285	0.89
	Mean	297	1.94	7.9	8.7	16.6	243	0.90
Relative	S.D.	18	0.04	1.4	1.1	2.1	54	0.70
	4113		0.69	2.0	2.6	4.6	74	0.29
	4114		0.70	2.6	3.7	6.3	61	0.31
	4115		0.66	3.2	3.1	6.4	103	0.34
	4116		0.64	2.8	2.9	5.6	82	0.31
	4117		0.59	2.6	2.5	5.1	87	0.27
	Mean		0.66	2.6	3.0	5.6	81	0.30
	S.D.		0.04	0.4	0.5	0.8	16	0.03

Appendix 8-30

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual organ weight of female rats (Recovery group)

Dose (mg/kg/day): 1000

Animal number	Spleen	Kidney (R)	Kidney (L)	Kidney (R+L)	Adrenal (R)	Adrenal (L)	Adrenal (R+L)	
	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	g(g/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	mg(mg/100g BW)	
Absolute	4113	0.54	0.99	0.96	1.95	32	34	66
	4114	0.39	1.01	0.94	1.95	30	33	63
	4115	0.66	1.00	1.04	2.04	35	39	74
	4116	0.61	1.01	0.92	1.93	36	39	75
	4117	0.53	1.03	1.03	2.06	45	48	93
	Mean	0.55	1.01	0.98	1.99	36	39	74
	S.D.	0.10	0.01	0.05	0.06	6	6	12
Relative	4113	0.19	0.34	0.33	0.68	11	12	23
	4114	0.14	0.36	0.34	0.70	11	12	23
	4115	0.22	0.34	0.35	0.69	12	13	25
	4116	0.21	0.34	0.31	0.66	12	13	26
	4117	0.16	0.32	0.32	0.63	14	15	29
	Mean	0.18	0.34	0.33	0.67	12	13	25
	S.D.	0.03	0.01	0.02	0.03	1	1	2

Appendix 9-1(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1001 Male 0 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Liver Microgranuloma: minimal

Spleen Hematopoiesis, extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Heart, Intestine,duodenum, Intestine,jejunum
Intestine ileum, Intestine,cecum, Intestine,colon, Intestine,rectum, Kidney
Lymph node,mesenteric, Lymph node,submandibular, Lung(bronchus), Parathyroid
Pituitary, Sciatic nerve, Stomach, Seminal vesicle, Spinal cord,thoracic, Testis
Thymus, Thyroid, Urinary bladder

Appendix 9-2(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1002 Male 0 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Liver Vacuolation, hepatocyte, periportal: minimal
Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow, femoral, Bone+Bone marrow, sternal, Cerebellum
Cerebrum, Epididymis, Heart, Intestine, duodenum, Intestine, jejunum
Intestine, ileum, Intestine, cecum, Intestine, colon, Intestine, rectum, Kidney
Lymph node, mesenteric, Lymph node, submandibular, Lung(bronchus), Parathyroid
Pituitary, Sciatic nerve, Spleen, Stomach, Seminal vesicle, Spinal cord, thoracic
Testis, Thymus, Thyroid, Urinary bladder

Appendix 9-3(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 1003 Male 0 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Kidney Regeneration,tubular: minimal

Liver Microgranuloma: minimal

Spleen Hematopoiesis,extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum, Intestine,cecum, Intestine,colon, Intestine,rectum
Lymph node,mesenteric, Lymph node,submandibular, Lung(bronchus), Parathyroid
Pituitary, Sciatic nerve, Stomach, Seminal vesicle, Spinal cord,thoracic, Testis
Thymus, Thyroid, Urinary bladder

Appendix 9-4(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1004 Male 0 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Liver Vacuolation, hepatocyte, periportal: minimal
Microgranuloma: minimal

Spleen Hematopoiesis, extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow, femoral, Bone+Bone marrow, sternal, Cerebellum
Cerebrum, Epididymis, Heart, Intestine, duodenum, Intestine, jejunum
Intestine, ileum, Intestine, cecum, Intestine, colon, Intestine, rectum, Kidney
Lymph node, mesenteric, Lymph node, submandibular, Lung(bronchus), Parathyroid
Pituitary, Sciatic nerve, Stomach, Seminal vesicle, Spinal cord, thoracic, Testis
Thymus, Thyroid, Urinary bladder

Appendix 9-5(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1005 Male 0 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Kidney Mineralization,papillary: minimal

Liver Microgranuloma: minimal

Lung(bronchus) Appearance,alveolar macrophage: minimal

Spleen Hematopoiesis,extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum, Intestine,cecum, Intestine,colon, Intestine,rectum
Lymph node,mesenteric, Lymph node,submandibular, Parathyroid, Pituitary
Sciatic nerve, Stomach, Seminal vesicle, Spinal cord,thoracic, Testis, Thymus
Thyroid, Urinary bladder

Appendix 9-6(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 1006 Male 0 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-7(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1007 Male 0 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-8(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2001 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-9(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2002 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-10(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2003 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-11(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2004 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-12(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2005 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-13(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 2006 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-14(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2007 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-15(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual gross and histopathological findings

Animal No. 2008 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-16(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 2009 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-17(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 2010 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-18(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 2011 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-19(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2012 Male 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-20(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 3001 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-21(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 3002 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-22(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3003 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

Epididymis	Small: mild, left
Testis	Small: mild, left
Other tissues	Not remarkable

Histopathology:

Epididymis	Hypospermia: moderate
Testis	Atrophy, seminiferous tubular: mild

Appendix 9-23(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3004 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-24(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 3005 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-25(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual gross and histopathological findings

Animal No. 3006 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-26(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 3007 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-27(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 3008 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-28(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3009 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-29(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 3010 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-30(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual gross and histopathological findings

Animal No. 3011 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-31(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual gross and histopathological findings

Animal No. 3012 Male 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-32(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 4001 Male 1000 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Heart Cardiomyopathy: minimal

Liver Microgranuloma: minimal

Spleen Hematopoiesis, extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Intestine,duodenum, Intestine,jejunum, Intestine,ileum
Intestine,cecum, Intestine,colon, Intestine,rectum, Kidney
Lymph node,mesenteric, Lymph node,submandibular, Lung(bronchus), Parathyroid
Pituitary, Sciatic nerve, Stomach, Seminal vesicle, Spinal cord,thoracic, Testis
Thymus, Thyroid, Urinary bladder

Appendix 9-33(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 4002 Male 1000 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Kidney Regeneration,tubular: mild

Liver Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum, Intestine,cecum, Intestine,colon, Intestine,rectum
Lymph node,mesenteric, Lymph node,submandibular, Lung(bronchus), Parathyroid
Pituitary, Sciatic nerve, Spleen, Stomach, Seminal vesicle, Spinal cord,thoracic
Testis, Thymus, Thyroid, Urinary bladder

Appendix 9-34(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual gross and histopathological findings

Animal No. 4003 Male 1000 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Liver Microgranuloma: minimal

Spleen Hematopoiesis, extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum, Intestine,cecum, Intestine,colon, Intestine,rectum, Kidney
Lymph node,mesenteric, Lymph node,submandibular, Lung(bronchus), Parathyroid
Pituitary, Sciatic nerve, Stomach, Seminal vesicle, Spinal cord,thoracic, Testis
Thymus, Thyroid, Urinary bladder

Appendix 9-35(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4004 Male 1000 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Kidney Mineralization, cortical: minimal

Liver Vacuolation, hepatocyte, periportal: minimal
Microgranuloma: minimal

Lung(bronchus) Appearance, alveolar macrophage: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum, Intestine,cecum, Intestine,colon, Intestine,rectum
Lymph node,mesenteric, Lymph node,submandibular, Parathyroid, Pituitary
Sciatic nerve, Spleen, Stomach, Seminal vesicle, Spinal cord,thoracic, Testis
Thymus, Thyroid, Urinary bladder

Appendix 9-36(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4005 Male 1000 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Kidney Regeneration,tubular: minimal

Liver Microgranuloma: minimal

Lung(bronchus) Appearance,alveolar macrophage: minimal

Spleen Hematopoiesis,extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum, Intestine,cecum, Intestine,colon, Intestine,rectum
Lymph node,mesenteric, Lymph node,submandibular, Parathyroid, Pituitary
Sciatic nerve, Stomach, Seminal vesicle, Spinal cord,thoracic, Testis, Thymus
Thyroid, Urinary bladder

Appendix 9-37(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4006 Male 1000 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-38(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4007 Male 1000 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-39(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 1101 Female 0 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Liver Vacuolation, hepatocyte, periportal: minimal

Lung(bronchus) Appearance, alveolar macrophage: minimal

Spleen Hematopoiesis, extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow, femoral, Bone+Bone marrow, sternal, Cerebellum
Cerebrum, Heart, Intestine, duodenum, Intestine, jejunum, Intestine, ileum
Intestine, cecum, Intestine, colon, Intestine, rectum, Kidney
Lymph node, mesenteric, Lymph node, submandibular, Parathyroid, Pituitary
Sciatic nerve, Stomach, Spinal cord, thoracic, Thymus, Thyroid, Urinary bladder
Uterus

Appendix 9-40(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1102 Female 0 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Heart Cardiomyopathy: minimal

Liver Hematopoiesis, extramedullary: minimal

Lung(bronchus) Appearance, alveolar macrophage: minimal

Spleen Hematopoiesis, extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Intestine,duodenum, Intestine,jejunum, Intestine,ileum
Intestine,cecum, Intestine,colon, Intestine,rectum, Kidney
Lymph node,mesenteric, Lymph node,submandibular, Parathyroid, Pituitary
Sciatic nerve, Stomach, Spinal cord,thoracic, Thymus, Thyroid, Urinary bladder
Uterus

Appendix 9-41(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1103 Female 0 mg/kg/day Day 45 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-42(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1104 Female 0 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Kidney Regeneration,tubular: minimal

Liver Microgranuloma: mild

Lung(bronchus) Appearance,alveolar macrophage: minimal

Spleen Hematopoiesis,extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Heart, Intestine,duodenum, Intestine,jejunum, Intestine,ileum
Intestine,cecum, Intestine,colon, Intestine,rectum, Lymph node,mesenteric
Lymph node,submandibular, Parathyroid, Pituitary, Sciatic nerve, Stomach
Spinal cord,thoracic, Thymus, Thyroid, Urinary bladder, Uterus

Appendix 9-43(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1105 Female 0 mg/kg/day Day 46 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-44(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1106 Female 0 mg/kg/day Day 46 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-45(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane
Individual gross and histopathological findings

Animal No. 1107 Female 0 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Kidney Mineralization,papillary: minimal

Liver Vacuolation,hepatocyte,periportal: minimal
Hematopoiesis,extramedullary: minimal
Microgranuloma: minimal

Spleen Hematopoiesis,extramedullary: mild, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Heart, Intestine,duodenum, Intestine,jejunum, Intestine,ileum
Intestine,cecum, Intestine,colon, Intestine,rectum, Lymph node,mesenteric
Lymph node,submandibular, Lung(bronchus), Parathyroid, Pituitary, Sciatic nerve
Stomach, Spinal cord,thoracic, Thymus, Thyroid, Urinary bladder, Uterus

Appendix 9-46(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1108 Female 0 mg/kg/day Day 45 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-47(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1109 Female 0 mg/kg/day Day 46 End of administration period

Gross pathology:

Stomach Focus, dark red, glandular stomach: 2 present
2x1mm, 1x1mm

Other tissues Not remarkable

Histopathology:

Stomach Erosion, glandular stomach: minimal

Appendix 9-48(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1110 Female 0 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-49(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1111 Female 0 mg/kg/day Day 43 End of administration period

Gross pathology:

Stomach Focus,dark red,glandular stomach: 1 present
3x1mm

Other tissues Not remarkable

Histopathology:

Liver Vacuolation,hepatocyte,periportal: minimal
Microgranuloma: minimal

Lung(bronchus) Hemorrhage,alveolar: minimal
Appearance,alveolar macrophage: minimal

Spleen Hematopoiesis,extramedullary: mild, erythroid

Stomach Erosion,glandular stomach: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Heart, Intestine,duodenum, Intestine,jejunum, Intestine,ileum
Intestine,cecum, Intestine,colon, Intestine,rectum, Kidney
Lymph node,mesenteric, Lymph node,submandibular, Parathyroid, Pituitary
Sciatic nerve, Spinal cord,thoracic, Thymus, Thyroid, Urinary bladder, Uterus

Appendix 9-50(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1112 Female 0 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-51(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2101 Female 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-52(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2102 Female 100 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-53(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2103 Female 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-54(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2104 Female 100 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-55(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 2105 Female 100 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-56(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2106 Female 100 mg/kg/day Day 45 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-57(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2107 Female 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-58(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 2108 Female 100 mg/kg/day Day 45 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-59(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2109 Female 100 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-60(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2110 Female 100 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-61(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2111 Female 100 mg/kg/day Day 45 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-62(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 2112 Female 100 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-63(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3101 Female 300 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-64(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual gross and histopathological findings

Animal No. 3102 Female 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-65(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3103 Female 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-66(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3104 Female 300 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-67(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3105 Female 300 mg/kg/day Day 45 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-68(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3106 Female 300 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-69(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 3107 Female 300 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-70(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3108 Female 300 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-71(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3109 Female 300 mg/kg/day Day 47 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-72(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3110 Female 300 mg/kg/day Day 46 End of administration period

Gross pathology:

Stomach Focus, dark red, glandular stomach: 2 present
2x5mm, 1x1mm

Other tissues Not remarkable

Histopathology:

Stomach Erosion, glandular stomach: mild

Appendix 9-73(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3111 Female 300 mg/kg/day Day 45 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-74(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 3112 Female 300 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-75(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4101 Female 1000 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Lung(bronchus) Appearance,alveolar macrophage: minimal

Spleen Hematopoiesis,extramedullary: minimal, erythroid

Thyroid Remnant,ultimobranchial body: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Heart, Intestine,duodenum, Intestine,jejunum, Intestine,ileum
Intestine,cecum, Intestine,colon, Intestine,rectum, Kidney
Lymph node,mesenteric, Lymph node,submandibular, Liver, Parathyroid, Pituitary
Sciatic nerve, Stomach, Spinal cord,thoracic, Thymus, Urinary bladder, Uterus

Appendix 9-76(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4102 Female 1000 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Kidney Mineralization,papillary: minimal

Liver Microgranuloma: minimal

Spleen Hematopoiesis,extramedullary: mild, erythroid

Thyroid Remnant,ultimobranchial body: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Heart, Intestine,duodenum, Intestine,jejunum, Intestine,ileum
Intestine,cecum, Intestine,colon, Intestine,rectum, Lymph node,mesenteric
Lymph node,submandibular, Lung(bronchus), Parathyroid, Pituitary, Sciatic nerve
Stomach, Spinal cord,thoracic, Thymus, Urinary bladder, Uterus

Appendix 9-77(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual gross and histopathological findings

Animal No. 4103 Female 1000 mg/kg/day Day 43 End of administration period

Gross pathology:

Stomach Focus, dark red, glandular stomach: 1 present
1x1mm

Other tissues Not remarkable

Histopathology:

Kidney Regeneration, tubular: minimal

Liver Vacuolation, hepatocyte, periportal: minimal
Microgranuloma: minimal

Spleen Hematopoiesis, extramedullary: minimal, erythroid

Stomach Erosion, glandular stomach: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow, femoral, Bone+Bone marrow, sternal, Cerebellum
Cerebrum, Heart, Intestine, duodenum, Intestine, jejunum, Intestine, ileum
Intestine, cecum, Intestine, colon, Intestine, rectum, Lymph node, mesenteric
Lymph node, submandibular, Lung(bronchus), Parathyroid, Pituitary, Sciatic nerve
Spinal cord, thoracic, Thymus, Thyroid, Urinary bladder, Uterus

Appendix 9-78(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4104 Female 1000 mg/kg/day Day 46 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-79(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4105 Female 1000 mg/kg/day Day 46 End of administration period

Gross pathology:

Stomach Focus, dark red, glandular stomach: 1 present
2x3mm

Other tissues Not remarkable

Histopathology:

Stomach Erosion, glandular stomach: mild

Appendix 9-80(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4106 Female 1000 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Liver Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Heart, Intestine,duodenum, Intestine,jejunum, Intestine,ileum
Intestine,cecum, Intestine,colon, Intestine,rectum, Kidney
Lymph node,mesenteric, Lymph node,submandibular, Lung(bronchus), Parathyroid
Pituitary, Sciatic nerve, Spleen, Stomach, Spinal cord,thoracic, Thymus, Thyroid
Urinary bladder, Uterus

Appendix 9-81(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4107 Female 1000 mg/kg/day Day 45 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-82(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4108 Female 1000 mg/kg/day Day 49 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-83(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4109 Female 1000 mg/kg/day Day 44 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-84(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4110 Female 1000 mg/kg/day Day 43 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Liver Vacuolation, hepatocyte, periportal: minimal

Spleen Hematopoiesis, extramedullary: mild, erythroid

Thyroid Remnant, ultimobranchial body: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow, femoral, Bone+Bone marrow, sternal, Cerebellum
Cerebrum, Heart, Intestine, duodenum, Intestine, jejunum, Intestine, ileum
Intestine, cecum, Intestine, colon, Intestine, rectum, Kidney
Lymph node, mesenteric, Lymph node, submandibular, Lung(bronchus), Parathyroid
Pituitary, Sciatic nerve, Stomach, Spinal cord, thoracic, Thymus, Urinary bladder
Uterus

Appendix 9-85(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4111 Female 1000 mg/kg/day Day 46 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 9-86(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 4112 Female 1000 mg/kg/day Day 46 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-1(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1008 Male 0 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-2(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 1009 Male 0 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-3(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1010 Male 0 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-4(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 1011 Male 0 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-5(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1012 Male 0 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-6(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4008 Male 1000 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-7(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4009 Male 1000 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-8(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorocheptane

Individual gross and histopathological findings

Animal No. 4010 Male 1000 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-9(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 4011 Male 1000 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-10(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4012 Male 1000 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-11(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1113 Female 0 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-12(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorohexane

Individual gross and histopathological findings

Animal No. 1114 Female 0 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-13(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1115 Female 0 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-14(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 1116 Female 0 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-15(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 1117 Female 0 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-16(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4113 Female 1000 mg/kg/day Day 57 End of recovery period

Gross pathology:

Liver Hepatodiaphragmatic nodule: 1 present
5x5x4mm

Other tissues Not remarkable

Histopathology:

Liver Hepatodiaphragmatic nodule: mild

Appendix 10-17(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4114 Female 1000 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-18(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4115 Female 1000 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-19(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual gross and histopathological findings

Animal No. 4116 Female 1000 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 10-20(1/1) A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross and histopathological findings

Animal No. 4117 Female 1000 mg/kg/day Day 57 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

No tissues examined

Appendix 11-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual estrous cycle in female rats during the pre-mating period (Main group)

Dose (mg/kg/day) : 0

Animal number	1	2	3	4	5	6	7	8	9	10	11	12	13	14a)	Count of estrus	Mean duration of cycles
1101	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
1102	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
1103	E	M	D	P	E	M	D	P	E	M	D	P	E	M	4	4.0
1104	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
1105	P	E	M	D	P	E	M	D	P	E	M	D	P	E	4	4.0
1106	P	E	M	D	P	E	M	D	P	E	M	D	P	E	4	4.0
1107	D	D	P	E	M	D	D	P	E	M	D	D	P	E	3	5.0
1108	E	M	D	P	E	M	D	P	E	M	D	P	E	M	4	4.0
1109	D	P	E	M	D	P	E	E	M	D	P	E	E	M	3	4.5
1110	E	M	D	P	E	M	D	P	E	M	D	P	E	M	4	4.0
1111	D	P	E	M	D	P	E	M	D	P	E	M	D	P	3	4.0
1112	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
Mean															3.4	4.1
S.D.															0.5	0.3

P : Proestrus E : Estrus M : Metestrus D : Diestrus

a): Day of sampling

Appendix 11-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual estrous cycle in female rats during the pre-mating period (Main group)

Dose (mg/kg/day) : 100

Animal number	1	2	3	4	5	6	7	8	9	10	11	12	13	14a)	Count of estrus	Mean duration of cycles
2101	M	D	D	P	E	M	D	D	P	E	M	D	D	P	2	5.0
2102	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
2103	D	P	E	M	D	P	E	M	D	P	E	M	D	P	3	4.0
2104	E	M	D	D	P	E	M	D	D	P	E	M	D	D	3	5.0
2105	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
2106	E	M	D	P	E	M	D	P	E	M	D	P	E	M	4	4.0
2107	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
2108	P	E	M	D	P	E	M	D	P	E	M	D	P	E	4	4.0
2109	D	P	E	M	D	P	E	M	D	P	E	M	D	P	3	4.0
2110	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
2111	E	M	D	P	E	M	D	P	E	M	D	P	E	M	4	4.0
2112	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
Mean															3.2	4.2
S.D.															0.6	0.4

P : Proestrus E : Estrus M : Metestrus

D : Diestrus

a): Day of sampling

Appendix 11-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual estrous cycle in female rats during the pre-mating period (Main group)

Dose (mg/kg/day) : 300

Animal number	1	2	3	4	5	6	7	8	9	10	11	12	13	14a)	Count of estrus	Mean duration of cycles
3101	P	E	M	D	D	P	E	M	D	D	P	E	M	D	3	5.0
3102	E	M	D	D	P	E	M	D	P	E	M	D	D	P	3	4.5
3103	M	D	D	P	E	M	D	D	P	E	M	D	D	P	2	5.0
3104	D	P	E	M	D	P	E	M	D	P	E	M	D	P	3	4.0
3105	E	M	D	P	E	M	D	P	E	M	D	P	E	M	4	4.0
3106	E	M	D	D	P	E	M	D	D	P	E	M	D	D	3	5.0
3107	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
3108	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
3109	D	P	E	M	D	D	P	E	M	D	P	E	M	D	3	4.5
3110	P	E	M	D	P	E	M	D	P	E	M	D	P	E	4	4.0
3111	D	P	E	M	D	D	P	E	M	D	D	P	E	M	3	5.0
3112	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
Mean															3.1	4.4
S.D.															0.5	0.5

P : Proestrus E : Estrus M : Metestrus

a): Day of sampling

D : Diestrus

Appendix 11-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluorooctane

Individual estrous cycle in female rats during the pre-mating period (Main group)

Dose (mg/kg/day) : 1000

Animal number	1	2	3	4	5	6	7	8	9	10	11	12	13	14a)	Count of estrus	Mean duration of cycles
4101	E	M	D	P	E	M	D	P	E	M	D	P	E	M	4	4.0
4102	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
4103	E	E	M	D	D	P	E	M	D	P	E	M	D	P	3	5.0
4104	E	M	D	P	E	M	D	P	E	M	D	P	E	M	4	4.0
4105	E	M	D	P	E	M	D	P	E	M	D	P	E	E	4	4.0
4106	E	M	D	P	E	M	D	P	E	M	D	P	E	M	4	4.0
4107	E	M	D	P	E	M	D	P	E	M	D	P	E	M	4	4.0
4108	P	E	M	D	P	E	M	D	P	E	M	D	P	E	4	4.0
4109	M	D	P	E	M	D	P	E	M	D	P	E	M	D	3	4.0
4110	D	P	E	M	D	P	E	M	D	P	E	M	D	P	3	4.0
4111	P	E	M	D	P	E	M	D	P	E	M	D	P	E	4	4.0
4112	P	E	M	D	P	E	M	D	P	E	M	D	P	E	4	4.0
Mean															3.7	4.1
S.D.															0.5	0.3

P : Proestrus E : Estrus

M : Metestrus

D : Diestrus

a): Day of sampling

Appendix 12-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual mating and fertility of animals

Dose (mg/kg/day): 0

Pairing number Male	Female	Copulated or not copulated	Days until copulation	Pregnant or non-pregnant
1001	1101	C	2	P
1002	1102	C	2	P
1003	1103	C	3	P
1004	1104	C	2	P
1005	1105	C	4	P
1006	1106	C	4	P
1007	1107	C	1	P
1008	1108	C	3	P
1009	1109	C	4	P
1010	1110	C	3	P
1011	1111	C	1	P
1012	1112	C	2	P

C: Copulated P: Pregnant

Appendix 12-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual mating and fertility of animals

Dose (mg/kg/day): 100

Pairing number Male	Female	Copulated or not copulated	Days until copulation	Pregnant or non-pregnant
2001	2101	C	1	P
2002	2102	C	2	P
2003	2103	C	1	P
2004	2104	C	2	P
2005	2105	C	2	P
2006	2106	C	3	P
2007	2107	C	2	P
2008	2108	C	4	P
2009	2109	C	1	P
2010	2110	C	2	P
2011	2111	C	3	P
2012	2112	C	2	P

C: Copulated P: Pregnant

Appendix 12-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual mating and fertility of animals

Dose (mg/kg/day): 300

Pairing number Male	Female	Copulated or not copulated	Days until copulation	Pregnant or non-pregnant
3001	3101	C	2	P
3002	3102	C	1	P
3003	3103	C	1	P
3004	3104	C	1	P
3005	3105	C	3	P
3006	3106	C	2	P
3007	3107	C	2	P
3008	3108	C	2	P
3009	3109	C	4	P
3010	3110	C	4	P
3011	3111	C	4	P
3012	3112	C	2	P

C: Copulated P: Pregnant

Appendix 12-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual mating and fertility of animals

Dose (mg/kg/day): 1000

Pairing number Male	Female	Copulated or not copulated	Days until copulation	Pregnant or non-pregnant
4001	4101	C	3	P
4002	4102	C	2	P
4003	4103	C	1	P
4004	4104	C	3	P
4005	4105	C	4	P
4006	4106	C	3	P
4007	4107	C	3	P
4008	4108	C	8	P
4009	4109	C	2	P
4010	4110	C	1	P
4011	4111	C	4	P
4012	4112	C	4	P

C: Copulated P: Pregnant

Appendix 13-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Delivery data on dams

Dose (mg/kg/day) : 0

Dam number	Gestation period	No. of corpora lutea	No. of implantation sites	Implantation index % a)	No. of stillborn pups (%)b)	No. of liveborn pups	Live birth index % c)
1101	22.0	18	17	94.4	0(0.0)	14	100.0
1102	22.0	17	15	88.2	0(0.0)	15	100.0
1103	22.0	18	17	94.4	0(0.0)	17	100.0
1104	22.0	16	15	93.8	0(0.0)	14	100.0
1105	22.0	16	15	93.8	1(6.7)	14	93.3
1106	22.0	18	16	88.9	0(0.0)	16	100.0
1107	22.0	16	16	100.0	0(0.0)	15	100.0
1108	22.0	15	14	93.3	0(0.0)	14	100.0
1109	22.0	18	16	88.9	0(0.0)	16	100.0
1110	21.0	13	13	100.0	0(0.0)	12	100.0
1111	22.0	20	18	90.0	0(0.0)	17	100.0
1112	22.0	18	16	88.9	0(0.0)	16	100.0
Total		203	188		1	180	
Mean	21.9	16.9	15.7	92.9	(0.6)	15.0	99.4
S.D.	0.3	1.8	1.4	4.1	(1.9)	1.5	1.9

a): (No. of implantation sites / No. of corpora lutea) × 100

b): (No. of stillborn pups / No. of stillborn and liveborn pups) × 100

c): (No. of liveborn pups / No. of stillborn and liveborn pups) × 100

Appendix 13-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Delivery data on dams

Dose (mg/kg/day) : 100

Dam number	Gestation period	No. of corpora lutea	No. of implantation sites	Implantation index % a)	No. of stillborn pups (%)b)	No. of liveborn pups	Live birth index % c)
2101	22.0	17	16	94.1	0(0.0)	14	100.0
2102	22.0	18	16	88.9	1(7.1)	13	92.9
2103	22.0	15	15	100.0	0(0.0)	11	100.0
2104	22.0	19	16	84.2	0(0.0)	16	100.0
2105	22.0	18	14	77.8	0(0.0)	14	100.0
2106	22.0	18	17	94.4	0(0.0)	14	100.0
2107	21.0	17	16	94.1	0(0.0)	15	100.0
2108	21.0	14	14	100.0	0(0.0)	13	100.0
2109	22.0	16	15	93.8	0(0.0)	15	100.0
2110	22.0	19	18	94.7	0(0.0)	15	100.0
2111	22.0	16	16	100.0	0(0.0)	15	100.0
2112	22.0	17	16	94.1	0(0.0)	15	100.0
Total		204	189		1	170	
Mean	21.8	17.0	15.8	93.0	(0.6)	14.2	99.4
S.D.	0.4	1.5	1.1	6.6	(2.0)	1.3	2.0

a): (No. of implantation sites / No. of corpora lutea) × 100

b): (No. of stillborn pups / No. of stillborn and liveborn pups) × 100

c): (No. of liveborn pups / No. of stillborn and liveborn pups) × 100

Appendix 13-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Delivery data on dams

Dose (mg/kg/day) : 300

Dam number	Gestation period	No. of corpora lutea	No. of implantation sites	Implantation index % a)	No. of stillborn pups (%)b)	No. of liveborn pups	Live birth index % c)
3101	22.0	17	17	100.0	0(0.0)	16	100.0
3102	22.0	17	16	94.1	0(0.0)	15	100.0
3103	22.0	15	14	93.3	0(0.0)	13	100.0
3104	22.0	20	19	95.0	0(0.0)	19	100.0
3105	22.0	15	15	100.0	0(0.0)	15	100.0
3106	22.0	19	17	89.5	0(0.0)	16	100.0
3107	22.0	16	16	100.0	0(0.0)	14	100.0
3108	22.0	14	14	100.0	0(0.0)	13	100.0
3109	23.0	13	13	100.0	0(0.0)	13	100.0
3110	22.0	16	14	87.5	0(0.0)	13	100.0
3111	21.0	13	12	92.3	0(0.0)	11	100.0
3112	22.0	16	15	93.8	0(0.0)	14	100.0
Total		191	182	0		172	
Mean	22.0	15.9	15.2	95.5	(0.0)	14.3	100.0
S.D.	0.4	2.2	1.9	4.5	(0.0)	2.1	0.0

a): (No. of implantation sites / No. of corpora lutea) × 100

b): (No. of stillborn pups / No. of stillborn and liveborn pups) × 100

c): (No. of liveborn pups / No. of stillborn and liveborn pups) × 100

Appendix 13-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Delivery data on dams

Dose (mg/kg/day) : 1000

Dam number	Gestation period	No. of corpora lutea	No. of implantation sites	Implantation index % a)	No. of stillborn pups (%)b)	No. of liveborn pups	Live birth index % c)
4101	21.0	16	15	93.8	0(0.0)	14	100.0
4102	22.0	17	16	94.1	1(6.7)	14	93.3
4103	22.0	19	18	94.7	0(0.0)	16	100.0
4104	23.0	16	15	93.8	3(23.1)	10	76.9
4105	22.0	16	16	100.0	1(6.3)	15	93.8
4106	21.0	19	17	89.5	0(0.0)	16	100.0
4107	22.0	17	16	94.1	0(0.0)	14	100.0
4108	21.0	16	16	100.0	0(0.0)	15	100.0
4109	22.0	15	15	100.0	0(0.0)	15	100.0
4110	22.0	15	14	93.3	0(0.0)	13	100.0
4111	22.0	17	15	88.2	1(7.1)	13	92.9
4112	22.0	14	14	100.0	0(0.0)	14	100.0
Total		197	187		6	169	
Mean	21.8	16.4	15.6	95.1	(3.6)	14.1	96.4
S.D.	0.6	1.5	1.2	4.1	(6.8)	1.6	6.8

a): (No. of implantation sites / No. of corpora lutea) × 100

b): (No. of stillborn pups / No. of stillborn and liveborn pups) × 100

c): (No. of liveborn pups / No. of stillborn and liveborn pups) × 100

Appendix 14-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual external examination of liveborn pups

Dose (mg/kg/day) : 0

Dam number	No. of males	No. of females	a) Sex ratio	Body weight(g)		External b) abnor- malities(%)c)
				Male	Female	
1101	10	4		6.9	6.1	0(0.0)
1102	4	11		6.6	6.0	0(0.0)
1103	9	8		6.4	6.3	0(0.0)
1104	7	7		6.9	6.8	0(0.0)
1105	7	7		6.6	6.3	0(0.0)
1106	11	5		6.7	6.3	0(0.0)
1107	6	9		6.9	6.9	0(0.0)
1108	10	4		6.9	6.7	0(0.0)
1109	6	10		6.2	5.7	0(0.0)
1110	7	5		6.7	6.1	0(0.0)
1111	7	10		6.3	5.9	0(0.0)
1112	4	12		5.6	5.7	0(0.0)
Total	88	92	0.49			0
Mean	7.3	7.7		6.6	6.2	(0.0)
S.D.	2.3	2.8		0.4	0.4	(0.0)

a): No. of males / No. of liveborn pups

b): No. of liveborn pups with external abnormalities

c): (No. of liveborn pups with external abnormalities / No. of liveborn pups) × 100

Appendix 14-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual external examination of liveborn pups

Dose (mg/kg/day) : 100

Dam number	No. of males	No. of females	a) Sex ratio	Body weight(g)		External b) abnor- malities(%)c)
				Male	Female	
2101	8	6		6.7	6.4	0(0.0)
2102	7	6		6.9	6.3	0(0.0)
2103	6	5		7.1	6.7	0(0.0)
2104	8	8		6.0	5.7	0(0.0)
2105	8	6		6.1	5.7	0(0.0)
2106	6	8		6.8	6.4	0(0.0)
2107	5	10		6.4	6.1	0(0.0)
2108	6	7		5.8	5.6	0(0.0)
2109	9	6		7.0	6.7	0(0.0)
2110	8	7		6.5	6.0	0(0.0)
2111	7	8		6.7	6.4	0(0.0)
2112	8	7		6.8	6.5	0(0.0)
Total	86	84	0.51			0
Mean	7.2	7.0		6.6	6.2	(0.0)
S.D.	1.2	1.3		0.4	0.4	(0.0)

a): No. of males / No. of liveborn pups

b): No. of liveborn pups with external abnormalities

c): (No. of liveborn pups with external abnormalities / No. of liveborn pups) × 100

Appendix 14-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual external examination of liveborn pups

Dose (mg/kg/day) : 300

Dam number	No. of males	No. of females	a) Sex ratio	Body weight(g)		External b) abnor- malities(%)c)
	Male	Female		Male	Female	
3101	7	9		6.2	6.1	0(0.0)
3102	5	10		6.7	6.5	0(0.0)
3103	7	6		6.8	6.3	0(0.0)
3104	9	10		6.5	6.2	0(0.0)
3105	8	7		6.9	6.3	0(0.0)
3106	8	8		6.3	6.2	0(0.0)
3107	11	3		6.8	6.2	0(0.0)
3108	7	6		7.5	7.0	0(0.0)
3109	6	7		7.0	6.7	0(0.0)
3110	5	8		7.2	6.6	0(0.0)
3111	6	5		5.7	5.4	0(0.0)
3112	6	8		7.1	6.4	0(0.0)
Total	85	87	0.49			0
Mean	7.1	7.3		6.7	6.3	(0.0)
S.D.	1.7	2.1		0.5	0.4	(0.0)

a): No. of males / No. of liveborn pups

b): No. of liveborn pups with external abnormalities

c): (No. of liveborn pups with external abnormalities / No. of liveborn pups) × 100

Appendix 14-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual external examination of liveborn pups

Dose (mg/kg/day) : 1000

Dam number	No. of males	No. of females	Sex ratio a)	Body weight(g)		External b) abnor- malities(%)c)
				Male	Female	
4101	8	6		6.3	6.0	0(0.0)
4102	1	13		6.7	6.3	0(0.0)
4103	7	9		6.7	6.3	0(0.0)
4104	6	4		7.8	7.3	0(0.0)
4105	6	9		6.9	6.5	0(0.0)
4106	8	8		5.7	5.4	0(0.0)
4107	7	7		6.7	6.7	0(0.0)
4108	6	9		5.9	5.6	0(0.0)
4109	9	6		6.4	5.9	0(0.0)
4110	7	6		7.0	6.4	0(0.0)
4111	5	8		6.7	6.1	0(0.0)
4112	5	9		6.5	6.1	0(0.0)
Total	75	94	0.44			0
Mean	6.3	7.8		6.6	6.2	(0.0)
S.D.	2.1	2.3		0.5	0.5	(0.0)

a): No. of males / No. of liveborn pups

b): No. of liveborn pups with external abnormalities

c): (No. of liveborn pups with external abnormalities / No. of liveborn pups) × 100

Appendix 15-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual viability index of pups

Dose (mg/kg/day) : 0

Dam number	No. of live pups		Viability index on day 4 after birth % a)
	Day 0	Day 4	
1101	14	13	92.9
1102	15	15	100.0
1103	17	17	100.0
1104	14	14	100.0
1105	14	12	85.7
1106	16	16	100.0
1107	15	15	100.0
1108	14	14	100.0
1109	16	16	100.0
1110	12	12	100.0
1111	17	16	94.1
1112	16	16	100.0
Total	180	176	
Mean	15.0	14.7	97.7
S.D.	1.5	1.7	4.5

a): (No. of live pups on day 4 / No. of liveborn pups on day 0) × 100

Appendix 15-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorooctane

Individual viability index of pups

Dose (mg/kg/day) : 100

Dam number	No. of live pups		Viability index on day 4 after birth % a)
	Day 0	Day 4	
2101	14	14	100.0
2102	13	13	100.0
2103	11	11	100.0
2104	16	16	100.0
2105	14	14	100.0
2106	14	14	100.0
2107	15	15	100.0
2108	13	13	100.0
2109	15	15	100.0
2110	15	15	100.0
2111	15	15	100.0
2112	15	15	100.0
Total	170	170	
Mean	14.2	14.2	100.0
S.D.	1.3	1.3	0.0

a): (No. of live pups on day 4 / No. of liveborn pups on day 0) × 100

Appendix 15-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual viability index of pups

Dose (mg/kg/day) : 300

Dam number	No. of live pups		Viability index on day 4 after birth % a)
	Day 0	Day 4	
3101	16	14	87.5
3102	15	15	100.0
3103	13	13	100.0
3104	19	17	89.5
3105	15	15	100.0
3106	16	14	87.5
3107	14	14	100.0
3108	13	13	100.0
3109	13	13	100.0
3110	13	13	100.0
3111	11	11	100.0
3112	14	14	100.0
Total	172	166	
Mean	14.3	13.8	97.0
S.D.	2.1	1.5	5.4

a): (No. of live pups on day 4 / No. of liveborn pups on day 0) × 100

Appendix 15-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual viability index of pups

Dose (mg/kg/day) : 1000

Dam number	No. of live pups		Viability index on day 4 after birth % a)
	Day 0	Day 4	
4101	14	10	71.4
4102	14	14	100.0
4103	16	16	100.0
4104	10	10	100.0
4105	15	15	100.0
4106	16	16	100.0
4107	14	14	100.0
4108	15	15	100.0
4109	15	15	100.0
4110	13	13	100.0
4111	13	13	100.0
4112	14	14	100.0
Total	169	165	
Mean	14.1	13.8	97.6
S.D.	1.6	2.0	8.3

a): (No. of live pups on day 4 / No. of liveborn pups on day 0) × 100

Appendix 16-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorheptane

Individual body weight of pups

Dose (mg/kg/day): 0

Dam number	Male		Female	
	0	4	0	4a)
1101	6.9	10.5	6.1	10.0
1102	6.6	10.0	6.0	8.8
1103	6.4	9.0	6.3	8.6
1104	6.9	10.3	6.8	9.8
1105	6.6	11.2	6.3	10.5
1106	6.7	9.5	6.3	8.6
1107	6.9	9.7	6.9	9.6
1108	6.9	9.4	6.7	9.6
1109	6.2	9.5	5.7	8.5
1110	6.7	9.7	6.1	8.9
1111	6.3	9.7	5.9	9.3
1112	5.6	8.7	5.7	8.8
Mean	6.6	9.8	6.2	9.3
S.D.	0.4	0.7	0.4	0.6

Unit: g

a): Day after birth

Appendix 16-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual body weight of pups

Dose (mg/kg/day): 100

Dam number	Male		Female	
	0	4	0	4a)
2101	6.7	11.1	6.4	10.2
2102	6.9	11.5	6.3	10.9
2103	7.1	11.9	6.7	11.1
2104	6.0	9.8	5.7	8.8
2105	6.1	9.7	5.7	9.5
2106	6.8	9.5	6.4	9.8
2107	6.4	9.5	6.1	9.0
2108	5.8	8.5	5.6	8.0
2109	7.0	10.4	6.7	10.3
2110	6.5	9.8	6.0	9.6
2111	6.7	9.9	6.4	9.4
2112	6.8	11.3	6.5	10.5
Mean	6.6	10.2	6.2	9.8
S.D.	0.4	1.0	0.4	0.9

Unit: g

a): Day after birth

Appendix 16-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual body weight of pups

Dose (mg/kg/day): 300

Dam number	Male		Female	
	0	4	0	4a)
3101	6.2	9.2	6.1	8.8
3102	6.7	9.8	6.5	9.3
3103	6.8	10.2	6.3	9.9
3104	6.5	9.5	6.2	9.3
3105	6.9	10.0	6.3	9.2
3106	6.3	10.7	6.2	10.6
3107	6.8	11.4	6.2	10.0
3108	7.5	10.7	7.0	10.3
3109	7.0	10.8	6.7	9.7
3110	7.2	11.7	6.6	10.8
3111	5.7	9.0	5.4	8.3
3112	7.1	11.4	6.4	10.2
Mean	6.7	10.4	6.3	9.7
S.D.	0.5	0.9	0.4	0.7

Unit: g

a): Day after birth

Appendix 16-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual body weight of pups

Dose (mg/kg/day): 1000

Dam number	Male		Female	
	0	4	0	4a)
4101	6.3	10.6	6.0	10.0
4102	6.7	9.1	6.3	8.7
4103	6.7	10.1	6.3	9.8
4104	7.8	13.3	7.3	12.5
4105	6.9	9.4	6.5	9.0
4106	5.7	8.0	5.4	7.7
4107	6.7	9.4	6.7	9.5
4108	5.9	9.0	5.6	8.6
4109	6.4	9.6	5.9	8.6
4110	7.0	11.0	6.4	9.8
4111	6.7	10.5	6.1	10.0
4112	6.5	10.3	6.1	9.6
Mean	6.6	10.0	6.2	9.5
S.D.	0.5	1.3	0.5	1.2

Unit: g

a): Day after birth

Appendix 17-1

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluorohexane

Individual gross pathological findings in pups on day 4 after birth

Dose (mg/kg/day) : 0

Dam number	No. of pups examined Total (Male + Female)	Findings
1101	13 (10 + 3)	NAF
1102	15 (4 + 11)	NAF
1103	17 (9 + 8)	NAF
1104	14 (7 + 7)	NAF
1105	12 (5 + 7)	NAF
1106	16 (11 + 5)	NAF
1107	15 (6 + 9)	NAF
1108	14 (10 + 4)	NAF
1109	16 (6 + 10)	NAF
1110	12 (7 + 5)	NAF
1111	16 (7 + 9)	NAF
1112	16 (4 + 12)	NAF

NAF: No abnormal findings

Appendix 17-2

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual gross pathological findings in pups on day 4 after birth

Dose (mg/kg/day) : 100

Dam number	No. of pups examined Total (Male + Female)	Findings
2101	14 (8 + 6)	NAF
2102	13 (7 + 6)	NAF
2103	11 (6 + 5)	NAF
2104	16 (8 + 8)	NAF
2105	14 (8 + 6)	NAF
2106	14 (6 + 8)	NAF
2107	15 (5 + 10)	NAF
2108	13 (6 + 7)	NAF
2109	15 (9 + 6)	NAF
2110	15 (8 + 7)	NAF
2111	15 (7 + 8)	NAF
2112	15 (8 + 7)	NAF

NAF: No abnormal findings

Appendix 17-3

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally
with Perfluoroheptane

Individual gross pathological findings in pups on day 4 after birth

Dose (mg/kg/day) : 300

Dam number	No. of pups examined Total (Male + Female)	Findings
3101	14 (5 + 9)	NAF
3102	15 (5 + 10)	NAF
3103	13 (7 + 6)	NAF
3104	17 (9 + 8)	NAF
3105	15 (8 + 7)	NAF
3106	14 (8 + 6)	NAF
3107	14 (11 + 3)	One male: Thymic remnant in neck
3108	13 (7 + 6)	NAF
3109	13 (6 + 7)	NAF
3110	13 (5 + 8)	NAF
3111	11 (6 + 5)	NAF
3112	14 (6 + 8)	NAF

NAF: No abnormal findings

Appendix 17-4

A combined repeated-dose/reproductive-developmental toxicity study in rats treated orally with Perfluoroheptane

Individual gross pathological findings in pups on day 4 after birth

Dose (mg/kg/day) : 1000

Dam number	No. of pups examined Total (Male + Female)	Findings
4101	10 (5 + 5)	NAF
4102	14 (1 + 13)	NAF
4103	16 (7 + 9)	NAF
4104	10 (6 + 4)	NAF
4105	15 (6 + 9)	NAF
4106	16 (8 + 8)	NAF
4107	14 (7 + 7)	NAF
4108	15 (6 + 9)	NAF
4109	15 (9 + 6)	NAF
4110	13 (7 + 6)	NAF
4111	13 (5 + 8)	NAF
4112	14 (5 + 9)	NAF

NAF: No abnormal findings

信頼性保証書（1/3）

試験番号 : R-991

試験表題 : ペルフルオロヘプタンのラットを用いた経口投与による反復投与毒性・生殖発生毒性併合試験

本試験は以下に示す基準を遵守して実施されたことを保証致します。

- 「新規化学物質等に係る試験を実施する試験施設に関する基準について」
 (平成 15 年 11 月 21 日 : 薬食発第 1121003 号、平成 15・11・17 製局第 3 号、環保企發第 031121004 号、平成 20 年 7 月 4 日 最終改正)

なお、調査は下記の通り実施致しました。

2011年 6月 17日
 株式会社ボゾリサーチセンター
 信頼性保証部門

試験における調査

項目	担当者	調査日	試験責任者及び運営管理者への報告日
試験計画書		2008年 8月 22日	2008年 8月 25日
作業予定表・コンピュータプロトコール		2008年 8月 29日	2008年 8月 30日
調製・被験物質の保存		2008年 9月 4日	2008年 9月 5日
被験液の濃度確認・均一性確認		2008年 9月 4日	2008年 9月 5日
群分け		2008年 9月 8日	2008年 9月 9日
体重・摂餌量測定・投与・一般状態の観察		2008年 9月 9日	2008年 9月 10日

信頼性保証書（2/3）

項目	担当者	調査日	試験責任者及び運営管理者への報告日
腔垢検査		2008年 9月 10日	2008年 9月 11日
詳細な一般状態の観察		2008年 9月 10日	2008年 9月 11日
交配		2008年 9月 24日	2008年 9月 25日
尿検査（尿量・色調・定性）		2008年 10月 15日	2008年 10月 16日
摂水量測定		2008年 10月 16日	2008年 10月 17日
分娩・授乳観察・体重測定		2008年 10月 16日	2008年 10月 17日
機能検査・握力測定・自発運動量の測定		2008年 10月 17日	2008年 10月 18日
剖検（F1：授乳4日）		2008年 10月 20日	2008年 10月 21日
採血・剖検		2008年 10月 21日	2008年 10月 22日
病理組織学検査（切り出し）		2008年 10月 27日	2008年 10月 29日
試験計画書変更書（1）		2009年 2月 5日	2009年 2月 6日
最終報告書草案・図・表・付表		2009年 2月 18日 2009年 2月 19日 2009年 2月 20日 2009年 2月 23日	2009年 2月 24日
改善確認		2009年 2月 25日	2009年 2月 27日
生データ（入荷～終了、臨床検査、剖検・病理、飼育関係、被験液の濃度確認・均一性確認）		2009年 4月 21日 2009年 4月 23日 2009年 4月 24日 2009年 4月 27日 2009年 4月 28日 2009年 4月 30日 2009年 5月 1日	2009年 5月 7日
生データ（被験物質関係）		2009年 7月 8日	2009年 7月 9日
改善確認		2009年 7月 13日	2009年 7月 14日
試験計画書変更書（2）		2010年 8月 26日	2010年 8月 27日
最終報告書		2011年 6月 17日	2011年 6月 17日

R-991

信頼性保証書（3/3）

プロセス調査

項目	試験番号	担当者	調査日	部門責任者及び運営管理者への報告日
動物入荷	B-6558	[REDACTED]	2008年 10月 8日	2008年 10月 9日
検疫・馴化	B-6558	[REDACTED]	2008年 10月 8日	2008年 10月 9日
	B-6558	[REDACTED]	2008年 10月 14日	2008年 10月 15日
飼育管理	B-6558	[REDACTED]	2008年 10月 10日	
		[REDACTED]	2008年 10月 14日	
		[REDACTED]	2008年 10月 21日	2008年 10月 22日
尿検査	B-6412	[REDACTED]	2008年 9月 3日	2008年 9月 4日
(沈渣・浸透圧)	B-6412	[REDACTED]	2008年 9月 4日	2008年 9月 5日
血液学検査・	B-6458	[REDACTED]	2008年 9月 4日	2008年 9月 5日
血液化学検査		[REDACTED]		
病理組織学検査	B-5843	[REDACTED]	2008年 9月 8日	2008年 9月 9日
(包埋・薄切・染色)	B-5809	[REDACTED]	2008年 9月 8日	2008年 9月 9日
	B-5809	[REDACTED]	2008年 9月 9日	2008年 9月 10日

R-991

試験責任者陳述書

試験番号 : R-991

試験表題 : ペルフルオロヘプタンのラットを用いた
経口投与による反復投与毒性・生殖発生毒性併合試験

本試験は以下に示す基準を遵守して実施したものであります。

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(平成 15 年 11 月 21 日 : 薬食発第 1121003 号、平成 15・11・17 製局第 3 号、
環保企発第 031121004 号、平成 20 年 7 月 4 日最終改正)

2011年6月17日

試験責任者
株式会社ボンリサーチセンター 御殿場研究所