B-6582

原本

最終報告書

試験名：アセナフチレンのラットを用いた
2週間回復性観察を含む28日間反復経口投与毒性試験

試験番号：B-6582

試験期間：2009年6月24日-2010年6月17日

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
〒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

株式会社ボゾリサーチセンター
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1. GLP 陳述書

試験番号　　：　　B-6582

試験表題　　：　　アセナフチレンのラットを用いた
2 週間回復性観察を含む 28 日間反復経口投与毒性試験

試験は以下の GLP 基準を遵守して実施したものです。

- 「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、環保企発第 031121004 号、平成 20 年 7 月 4 日 最終改正）

[redacted]　2010 年 6 月 17 日 [redacted]

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

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3.1 試験計画書

試験番号 : B-6582
試験表題 : アセナフチレンのラットを用いた
2週間回復性観察を含む28日間反復経口投与毒性試験

3.2 試験目的

被験物質をラットに28日間反復経口投与し、その影響を明らかにするとともに、その後2週間の回復期間を設けて障害の可逆性を調べることを目的とした。

3.3 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

3.4 試験受託者

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〒151-0065 東京都渋谷区大山町 36-7

3.5 試験実施施設

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〒412-0039 静岡県御殿場市かまど 1284
運営管理者 [redacted]

3.6 試験日程

試験開始日 : 2009年 6月 24日
被験物質入手日 : 2008年 10月 30日 注)
動物入荷日 : 2009年 7月 1日
投与開始日（実験開始日）
: 2009年 7月 9日
投与期間終了日 : 2009年 8月 5日
投与期間終了剖検日 : 2009年 8月 6日
回復期間終了剖検日 : 2009年 8月 20日
病理学検査終了日（実験終了日）
: 2009年 11月 11日
試験終了日 : 2010年 6月 17日

注) : 受領後は被験物質保存責任者が保存・管理し、試験責任者への配布は2009年7月1日であった。

3.7　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

[redacted]

3.8　試験担当者

被験物質保存責任者：
試験主担当者　　：
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　：

[redacted]

3.9　試験従事者

検疫・馴化　　：

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：

[redacted]

採血・血液学検査・血液化学検査
：[redacted]

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：[redacted]

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3.10　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

本試験において、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。

3.11　資料保存

試験計画書（原本）、記録文書、生データ、報告書類（最終報告書の原本を含む）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保存する。なお、その期間は最終報告書提出後 10 年間とする。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、試験終了時に廃棄する。

3.12　試験責任者の記名・捺印

[redacted]　2010年 6月17日 [redacted]

株式会社ボゾリサーチセンター　御殿場研究所

4. 要約

アセナフチレンの 28 日間反復経口投与毒性試験を 6 週齢の Sprague-Dawley 系 SPF ラット〔Crl:CD(SD)、1 群雌雄各 6 又は 12 匹〕を用いて実施した。投与量は 0（0.5 w/v% メチルセルロース水溶液：対照群）、4、20 及び 100 mg/kg とし、また、対照群と 100 mg/kg 投与群の一部の個体（1 群雌雄各 6 匹）については投与期間終了後 2 週間の休薬期間を設け、毒性変化の可逆性を検討した。

詳細な観察を含む一般状態では、100 mg/kg 投与群の雌で流涎が散見されたほか、一部で粗毛及び削痩も認められた。更に、オープンフィールド内観察に立ち上がり回数の低値も認められた。

機能検査、握力及び自発運動量では、100 mg/kg 投与群の雄で聴覚に、100 mg/kg 投与群の雌で痛覚に弱い反応の動物が散見された。また、100 mg/kg 投与群の雌で前肢握力の低値が、100 mg/kg 投与群の雌雄で自発運動量の低値がみられた。

体重及び摂餌量では、低値が 100 mg/kg 投与群の雌雄でみられ、体重増加量も低値を示した。

尿検査（摂水量を含む）では、沈渣において小円形上皮細胞の陽性例の発現頻度の増加傾向が 100 mg/kg 投与群の雄で、摂水量及び尿量の高値と浸透圧の低値が 100 mg/kg 投与群の雌雄でみられた。

血液学検査では、網赤血球率の低値及び血小板数の高値が 100 mg/kg 投与群の雌雄で、ヘモグロビン量及び平均赤血球血色素濃度の高値並びに活性化部分トロンボプラスチン時間の延長が 100 mg/kg 投与群の雌でみられた。

血液化学検査では、総コレステロール及びリン脂質の高値が 100 mg/kg 投与群の雌雄で、総たん白質及びアルブミンの高値が 100 mg/kg 投与群の雄でみられた。

病理学検査では、剖検で粗毛、低栄養状態及び子宮の小型化が 100 mg/kg 投与群の雌でみられ、重量及び組織学検査では 20 mg/kg 以上の投与群の雌雄で肝臓に、100 mg/kg 投与群の雌雄で胸腺、心臓、大腿骨（骨髄を含む）、胸骨（骨髄を含む）、膀胱、腎臓、脾臓及び副腎に、雄で胃に、雌で腸間膜リンパ節、子宮及び卵巣に変化が認められた。

上述した変化のうち、回復期間中あるいは回復期間終了時にも雌雄の握力及び尿検査に、雄の病理学検査の副腎に変化がみられたが、その他の変化は休薬とともに軽減あるいは消失し、回復性を示した。

以上の結果、アセナフチレンの本試験条件下における無影響量は病理学検査における肝臓の変化などから 4 mg/kg/day と推定された。

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依頼により、アセナフチレンをラットに28日間反復経口投与し、その影響を明らかにするとともに、2週間休薬し、障害の可逆性を調べたのでその成績を報告する。なお、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いる。また、遵守した基準及び準拠したガイドラインなどは以下の通りである。

1) 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)

2) 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 407」
  (OECD理事会：1995年7月27日)

3) 動物の福祉

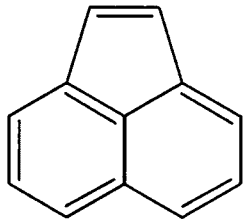
- 「動物の愛護及び管理に関する法律」
  (昭和48年10月1日法律第105号、平成18年6月2日 最終改正)
- 「実験動物の飼養及び保管並びに苦痛の軽減に関する基準」
  (平成18年4月28日環境省告示第88号)
- 「動物実験の適正な実施に向けたガイドライン」
  (日本学術会議、平成18年6月1日)

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

被験物質は新日鐵化学株式会社より提供された。本試験に使用した被験物質のロット番号、純度等は次の通りである。また、検査成績書を添付資料1に示した。

名称	:	アセナフチレン
英名	:	Acenaphthylene
CAS 番号	:	208-96-8
官報公示整理番号	:	4-644
分子量	:	152.19
分子式	:	$C_{12}H_8$
構造式	:	
ロット番号	:	7-MOM
純度	:	96.3 %
不純物		
アセナフテン	:	3.3 %
入手量	:	775 g
安定性	:	投与終了後、被験物質について提供先で安定性を実施し、安定であることが確認された（添付資料2）。
保存方法	:	冷蔵（許容範囲 1~10°C；実測値 3~7°C）
保存場所	:	御殿場研究所　被験物質保存室及び第1研究棟被験物質調製室
取扱い上の注意	:	マスク、手袋を着用した。 換気のよい場所で行い粉塵が飛散しないように取り扱った。
返却	:	被験物質 1 g を保存試料として保存した。分析用に小分けした被験物質の残量は廃棄した。また、被験物質の残量は提供先に返却し、安定性を確認後廃棄した。

6.1.2 媒体

名称	:	メチルセルロース 400cP
ロット番号	:	EWM1974
メーカー	:	和光純薬工業株式会社
保存方法	:	室温
保存場所	:	御殿場研究所　第 1 研究棟被験物質調製室

なお、媒体については、本試験に先立って実施した被験液中のアセナフチレンの安定性・均一性試験（試験番号：A-2171）において、0.5 w/v%メチルセルロース水溶液中での被験物質の安定性及び均一性に良好な結果が得られていることから、0.5w/v%メチルセルロース水溶液を選択した。

6.2 投与液の調製

6.2.1 媒体の調製

調製方法	:	メチルセルロース 400cP を注射用水（株式会社大塚製薬工場、ロット番号；8K74）に溶解し、0.5 w/v%メチルセルロース水溶液とした。
保存方法	:	冷所（冷蔵庫内、許容範囲 1~10°C；実測値 4~6°C）に保存し、調製後 8 日以内に被験液の調製に使用した。

6.2.2 被験液の調製

濃度ごとに必要量の被験物質を正確に採取し、0.5 w/v%メチルセルロース水溶液に懸濁して 0.8 mg/mL 液（低用量群液）、4 mg/mL 液（中用量群液）及び 20 mg/mL 液（高用量群液）を調製した。被験液は 8 日に 1 回以上の頻度で調製し、調製後 8 日以内に使用した。

6.2.3 投与液の保存方法

投与液は 1 日必要分ずつ褐色ガラス瓶に分注し、使用時まで冷所（冷蔵庫内、許容範囲 1~10°C；実測値 3~6°C）に保存した。

6.2.4 媒体中での安定性

本被験物質の 0.1 及び 200 mg/mL 懸濁液（媒体：0.5 w/v%メチルセルロース水溶液）は、冷所（冷蔵庫内、1~10°C）、遮光で 8 日間、その後室温で 24 時間安定であることが株式会社ボゾリサーチセンター御殿場研究所で確認されている（試験番号：A-2171、添付資料 3）。

6.2.5 被験液の濃度・均一性確認

投与 1 週と 4 週の投与に用いる各濃度の被験液について、その濃度・均一性を株式会社ボゾリサーチセンター 御殿場研究所で HPLC 法を用いて確認した。その結果、表

示値に対する濃度の割合は 100.1~106.5 %（許容範囲：表示値に対する割合；100±10 %）、均一性は 0.6~1.9 %（許容値：CV10 %以下）であり、いずれも許容範囲内であった（添付資料 4-1 及び 4-2）。分析法の概略を次に示す。

1 濃度当たりの採取本数及び採取量 : 3 本（上、中及び下層から採取）、1 本につき 10 mL

測定対象物質 : アセナフチレン

測定対象標準物質

名称 : アセナフチレン

ロット番号 : 7-MOM

保存方法 : 冷蔵（許容範囲 1~10°C ；実測値 2~7°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

HPLC 測定条件

カラム : Cosmosil 5C18-MS-II（4.6 mm×150 mm 、5 μm、ナカライテスク株式会社）

カラム恒温槽設定温度 : 30°C

移動相 : 精製水／アセトニトリル（3/7、v/v）

流速 : 1.0 mL/min

検出 : UV（測定波長 254 nm）

注入量 : 10 μL

オートサンプラー設定温度 : 10°C

分析時間 : 8 分

注入順序 :

注入順序	注入回数	注入内容
1	3	標準溶液（システム適合性用）
2	3	標準溶液（定量用）
3	1	測定実測試料（0.8 mg/mL-上層）
4	1	測定実測試料（4 mg/mL-上層）
5	1	測定実測試料（20 mg/mL-上層）
6	1	測定実測試料（0.8 mg/mL-中層）
7	1	測定実測試料（4 mg/mL-中層）
8	1	測定実測試料（20 mg/mL-中層）
9	1	測定実測試料（0.8 mg/mL-下層）
10	1	測定実測試料（4 mg/mL-下層）
11	1	測定実測試料（20 mg/mL-下層）

標準溶液及び測定実測試料の測定は、注入後 24 時間以内に実施した。なお、バリデーション試験で、オートサンプラー内における 24 時間保存後の安定性が確認

されている。

6.3　試験動物種及び系統の選択理由

毒性試験法ガイドラインによりラットを用いた試験が必要とされている。この試験に使用された系統のラットは特性がよく知られ、背景資料が豊富であることから選択した。

6.4　試験動物及び群分け

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〕雌雄各 47 匹[注)] を 5 週齢で入手し、当所で 8 日間検疫・馴化飼育し、一般状態の観察（1 回/日）、体重測定（3 回）及び詳細な一般状態の観察（1 回）を行い、体重増加量、一般状態及び詳細な一般状態の観察に異常がみられず健康と思われる雌雄各 36 匹（主群として雌雄各 24 匹、回復群として雌雄各 12 匹）を選び、6 週齢で試験に供した。投与開始日の体重範囲は、雄で 209~234 g、雌で 147~177 g であった。動物は検疫・馴化期間中の体重増加量により選別後、群分け当日（投与開始の 2 日前）の体重に基づいて層別化し、各群の平均体重ができるだけ均等となるよう各群を構成した。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合せ（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）により行った。また、余剰動物は投与開始日に試験系から除外した。

注）：試験計画書に従い、注文匹数は雌雄各 45 匹であったが、実際には雌雄各 47 匹が納入された。

6.5　飼育条件

動物は温度 21~25°C（許容範囲：23±3°C）、相対湿度 46~61 %、（許容範囲：50±20 %）、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（303 号室）で、ブラケット式金属製網ケージ（W 250×D 350×H 200 mm：日本ケージ株式会社）で個別飼育し、毎日 1 回の飼育室内の清掃を実施した。固形飼料 CRF-1（オリエンタル酵母工業株式会社、ロット番号：090309、090407）及び御殿場市営水道水を給水瓶により自由に摂取させた。

6.6　飼料及び飲料水中の混入物質

飼料中の混入物質に関しては使用ロットについて Eurofins Scientific Analytics で分析を行い、また、飲料水については東芝機械環境センター株式会社に水道法に準拠する水質検査を定期的に（年 4 回）依頼した。これらの分析成績書を入手し、試験成績に影響がないことを確認した後、写しを保存した。

6.7　動物の識別及びケージへの表示

動物は入荷時に小動物耳標を装着して個体識別した。入荷から群分け前までの間は試験番号、性別及び耳標番号を明記したケージラベルをつけた。群分け後は、性別及

び用量ごと（対照群、低、中及び高用量群の順）に4桁の番号をつけた。この場合、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。各飼育ケージには、群分け前まで使用したケージラベルの裏に用量（群）ごとに色分けしたラベルをつけ、試験番号、投与経路、投与量、性、動物番号、耳標番号及び剖検予定日を明記した。ただし、詳細な一般状態の観察、機能検査、握力及び自発運動量測定中は、観察者に対して投与の情報を制限するため、ケージラベルを裏返して試験番号、性別及び耳標番号のみを表示した。

6.8　投与経路、投与期間、投与回数及び回復期間とそれらの選択理由

毒性試験法ガイドラインに準じ、投与経路は経口投与を選択し、投与期間は28日間とした。投与回数は反復投与試験で一般的に行われている1日1回（7回/週）とした。回復期間は障害の可逆性を検討するのに適当と考えられる2週間（14日間）とし、この間投与を行わなかった。

6.9　投与方法

投与容量は 5 mL/kg 体重とし、胃ゾンデを用いて強制経口投与した（08:00~11:21の間）。対照群には媒体（0.5 w/v%メチルセルロース水溶液）を同様に投与した。個体ごとの投与液量（表示単位：0.1 mL）は最新の体重を基準に算出した。

6.10　投与量及びその設定根拠並びに群構成

アセナフチレンの 0（0.5 w/v%メチルセルロース水溶液）、100、300 及び 1000 mg/kg/day を1群雌雄各5匹のラットに14日間反復経口投与した結果[1)]、主な変化として、雌雄で1000 mg/kg投与群で全例が死亡し、100 mg/kg以上の投与群の器官重量に変化がみられことから、本試験における投与量は、100 mg/kg投与群を高用量とし、公比5で除し、20 mg/kgを中用量に、4 mg/kgを低用量に設定し、対照群を加え4群構成とした。1群当たりの動物を主群では雌雄各6匹、回復群では対照群及び高用量群で雌雄各6匹とした。群構成表を表1.に示す。

表1.群構成表

試験群	投与量 (mg/kg)	濃　度 (mg/mL)	投与容量 (mL/kg)	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	5	雄	6	1001~1006	6	1007~1012
				雌	6	1101~1106	6	1107~1112
低用量群	4	0.8	5	雄	6	2001~2006	-	-
				雌	6	2101~2106	-	-
中用量群	20	4	5	雄	6	3001~3006	-	-
				雌	6	3101~3106	-	-
高用量群	100	20	5	雄	6	4001~4006	6	4007~4012
				雌	6	4101~4106	6	4107~4112

6.11　観察及び検査の方法

それぞれ記載された時期に観察及び検査を実施した。試験日の起算に関しては下記の通りとした。

投与1日（day 1 of administration）	：投与開始日
投与1週（week 1 of administration）	：投与1から投与7日
回復1日（day 1 of recovery）	：回復開始日（投与期間終了の翌日）
回復1週（week 1 of recovery）	：回復1から回復7日

6.11.1　一般状態の観察

全個体について投与期間中は毎日3回、投与前と投与直後及び約2時間後（ただし、休日と詳細な一般状態の観察、機能検査、握力及び自発運動量測定を実施する時は投与前と投与直後の2回）、回復期間中は毎日1回、体外表、栄養状態、姿勢、行動及び排泄物などの一般状態を観察した。

6.11.2　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、全個体について、投与開始前に1回、投与期間中及び回復期間中は毎週1回実施した。また、機能検査、握力及び自発運動量の測定は、投与4週（雄を投与26日、雌を投与27日）及び回復2週（回復13日）に行った。詳細な一般状態の観察及び機能検査については実測値あるいはスコア化した評点法を用いた。なお、観察及び検査は投与の情報を制限（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。

6.11.2.1　詳細な一般状態の観察

1)　ホームケージ内観察

姿勢、痙攣、異常行動

2)　手に持っての観察

ケージからの取り出しやすさ、被毛・皮膚の状態、眼・鼻の分泌物、眼球（眼球突出、眼瞼閉鎖状態）、可視粘膜、自律神経機能（流涙、立毛、瞳孔径、流涎、異常呼吸）、ハンドリングに対する反応

3)　オープンフィールド内観察

覚醒状態、痙攣、異常行動、常同行動、歩行、姿勢、身繕い、立ち上がり回数、排泄物（排糞数、排尿）

6.11.2.2　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

6.11.2.3　　握力測定

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。

6.11.2.4　　自発運動量の測定

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 分の測定値を集計した。

6.11.3　　体重測定

全個体について、投与期間中は投与 1、4、7、10、14、17、21、24 及び 28 日の投与前に、回復期間中は回復 1、3、7、10 及び 14 日に測定した。測定は 08:13~10:27 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（07:56~08:19）。

6.11.4　　摂餌量測定

全個体について、投与期間中は投与 1、7、14、21 及び 28 日の投与前に、回復期間中は回復 7 及び 14 日に測定した。測定は 08:32~10:08 の間に行った。なお、投与開始日の測定は前日からの 1 日量を、投与 7 日は 6 日間の累積摂取量を、その後は 7 日ごとに 7 日間の累積摂取量を測定し、1 匹 1 日量を算出した。回復 1 週は回復 1 日から 7 日までの 6 日間の累積摂取量を、その後は 7 日間の累積摂取量を測定し、1 匹 1 日量を算出した。

6.11.5 尿検査

投与4週及び回復2週に行った。

投与4週（投与23日の投与後）は全個体について、回復2週（回復9日）は回復群の全個体について、検査当日に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、表2.に記載した項目及び方法により検査した。また、摂水量は、採尿ケージに収容した状態で前日からの1日当たりの摂水量を給水瓶を用いて測定した。

表2. 尿検査の項目、測定法及び使用機器など

1）4時間尿についての検査	
検査項目	測定方法
pH	オーションスティックス-7EA試験紙[a]（アークレイ株式会社）
たん白質	オーションスティックス-7EA試験紙[a]（アークレイ株式会社）
ケトン体	オーションスティックス-7EA試験紙[a]（アークレイ株式会社）
グルコース	オーションスティックス-7EA試験紙[a]（アークレイ株式会社）
潜血	オーションスティックス-7EA試験紙[a]（アークレイ株式会社）
ビリルビン	オーションスティックス-7EA試験紙[a]（アークレイ株式会社）
ウロビリノーゲン	オーションスティックス-7EA試験紙[a]（アークレイ株式会社）
色調	肉眼観察
沈渣	鏡検法
尿量（4時間量）注)	目盛付スピッツ管を用いた容量測定（単位：mL）
2）20時間尿についての検査	
検査項目	測定方法
尿量（20時間量）注)	メスシリンダーを用いた容量測定（単位：mL）
浸透圧	氷点降下法[b]（単位：mOsm/kg）
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トOM-6030（アークレイ株式会社）	

注）：4時間の尿量と20時間の尿量を合計して24時間の尿量（mL/24h）を算出した。

6.11.6　　血液学検査

投与期間及び回復期間終了の翌日の計画剖検時に、前日から一夜（約 16~20 時間）絶食させた全個体について、エーテル麻酔下で開腹し、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（約 1 mL）を採取した。得られた血液について表 3.1）に記載した項目及び方法により検査した。更に、血液（約 0.9 mL）を 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、遠心分離（3,000 rpm、1,580×g、10 分間）により得られた血漿について表 3.2）に記載した項目及び方法により検査した。なお、鏡検による確認に備え、全個体について May-Grünwald-Giemsa 染色法による血液塗抹標本を作製したが、鏡検による確認は不要と判断し、鏡検は実施しなかった。

表 3. 血液学検査の項目、測定法及び使用機器など

1）EDTA-2K 加血液についての検査		
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 [a)]	$10^4/\mu L$
ヘモグロビン量（HGB）	シアンメトヘモグロビン変法 [a)]	g/dL
ヘマトクリット値（HCT）	赤血球数及び平均赤血球容積から算出 [a)]	%
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 [a)]	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 [a)]	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 [a)]	g/dL
網赤血球率（Reticul.）	RNA 染色によるレーザーフローサイトメトリー法 [a)]	%
血小板数（PLT）	2 角度レーザーフローサイトメトリー法 [a)]	$10^4/\mu L$
白血球数（WBC）	2 角度レーザーフローサイトメトリー法 [a)]	$10^2/\mu L$
白血球百分率[注)]	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 [a)]	$10^2/\mu L$
2）クエン酸ナトリウム加血液から分離した血漿についての検査		
検査項目	測定方法	単位
プロトロンビン時間（PT）	クロット法 [b)]	s
活性化部分トロンボプラスチン時間（APTT）	クロット法 [b)]	s
フィブリノーゲン量（FIB）	トロンボプラスチン法 [b)]	mg/dL
使用測定機器 [a)]：総合血液学検査装置アドヴィア 120（Siemens Healthcare Diagnostics Inc., Illinois, USA） [b)]：血液凝固自動測定装置　ACL 100（Instrumentation Laboratory）		

注）：リンパ球（LYMP）、好中球（NEUT）、好酸球（EOS）、好塩基球（BASO）、単球（MONO）及び大型非染色球（LUC）。また、白血球百分率と白血球数から各分画の実数を算出した。

6.11.7　　血液化学検査

血液学検査用試料と同時に採取した血液（約 4 mL）を凝固促進剤入り試験管（ベノジェクト II-オートセップ：テルモ株式会社）に取り、遠心分離（3,000 rpm、1,580×g、10 分間）し、得られた血清について、表 4.1）に記載した項目及び方法により検査した。また、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（約 2 mL）を遠心分離（3,000 rpm、1,580×g、10 分間）し、得られた血漿について表 4.2）に記載した項目及び方法により検査した。

表 4. 血液化学検査の項目、測定法及び使用機器など

1）分離した血清についての検査		
検査項目	測定方法	単位
ALP	Bessey-Lowry 法 [a)]	IU/L
総コレステロール（T-CHO）	CEH-COD-POD 法 [a)]	mg/dL
トリグリセライド（TG）	LPL-GK-GPO-POD 法 [a)]	mg/dL
リン脂質（PL）	PLD-ChOD-POD 法 [a)]	mg/dL
総ビリルビン（T-BIL）	ビリルビンオキシダーゼ法 [a)]	mg/dL
グルコース（GLU）	グルコースデヒドロゲナーゼ法 [a)]	mg/dL
尿素窒素（BUN）	Urease-LEDH 法 [a)]	mg/dL
クレアチニン（CRNN）	Creatininase-creatinase-sarcosine oxidase-POD 法 [a)]	mg/dL
ナトリウム（Na）	イオン選択電極法 [a)]	mmol/L
カリウム（K）	イオン選択電極法 [a)]	mmol/L
塩素（Cl）	イオン選択電極法 [a)]	mmol/L
カルシウム（Ca）	OCPC 法 [a)]	mg/dL
無機リン（P）	モリブデン酸法 [a)]	mg/dL
総たん白質（TP）	Biuret 法 [a)]	g/dL
アルブミン（ALB）	BCG 法 [a)]	g/dL
A/G 比（A/G）	総たん白質及びアルブミンから算出	
2）ヘパリン加血液から分離した血漿についての検査		
検査項目	測定方法	単位
AST	UV-rate 法 [a)]	IU/L
ALT	UV-rate 法 [a)]	IU/L
LDH	UV-rate 法 [a)]	IU/L
γ-GTP	L-γ-グルタミル-3-カルボキシ-4-ニトロアニリド法 [a)]	IU/L
使用測定機器 [a)]：臨床化学自動分析装置　TBA-120FR 形（東芝メディカルシステムズ株式会社）		

6.11.8　病理学検査

6.11.8.1　剖検

すべての動物について、採血後腹大動脈切断により放血致死させ、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。

6.11.8.2　器官重量測定

すべての動物について、次に示す器官の重量（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 100 g 当たりの相対重量を算出した。

なお、*印を付し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、副腎*、胸腺、脾臓、心臓、肝臓、腎臓*、精巣*、精巣上体*、卵巣*、子宮

6.11.8.3　病理組織学検査

すべての個体について次に示す器官・組織を採取し、リン酸緩衝 10 v/v%ホルマリン液で固定した。ただし、肺はリン酸緩衝 10 v/v%ホルマリン液を注入後、眼球及び視神経はリン酸緩衝液で調製した 3 v/v%グルタルアルデヒド・2.5 v/v%ホルマリン液で固定後、精巣及び精巣上体はブアン液で固定した後、それぞれ、リン酸緩衝 10 v/v%ホルマリン液で保存し、パラフィン包埋した。その後、切片としてヘマトキシリン・エオジン染色標本を作製し、主群の対照群及び高用量群（肉眼的異常部位については全例）について鏡検した。*で示した両側性器官については両側を摘出したが、鏡検は左側のみ行った。なお、被験物質投与の影響が疑われた雌雄の副腎、胸骨（骨髄を含む）、大腿骨（骨髄を含む）、腎臓、肝臓、胸腺及び膀胱、雄の胃、雌の腸間膜リンパ節、脾臓及び子宮については低及び中用量群並びに回復群の全個体を鏡検した。また、上皮小体の欠落が主群で高用量群の雌 1 例に認められたが、少数例であり、残りの高用量群において被験物質投与の変化が認められていないことから、試験成績に影響はないと判断した。

大脳、小脳、脊髄（胸部）、坐骨神経、眼球*、下垂体、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、気管、肺（気管支を含む）、胃、十二指腸、空腸、回腸（パイエル板を含む）、盲腸、結腸、直腸、肝臓、腎臓*、膀胱、精巣*、精巣上体*、前立腺、卵巣*、子宮、胸骨（骨髄を含む）、大腿骨（骨髄を含む）*及び大腿部骨格筋 *

他に、視神経*（視神経は眼球と分離せず、ヘマトキシリン・エオジン染色標本作製まで実施した。）、ハーダー腺*、胸大動脈、舌、食道、顎下腺*、舌下腺*、膵臓、腟、精嚢、乳腺（鼠径部）*、皮膚（鼠径部）*、個体識別部位（耳介）及び喉頭を摘出して保存した。

6.12 統計解析

オープンフィールド内観察の定量的項目、機能検査における定量的項目、握力測定、自発運動量の測定、体重（体重増加量を含む）、摂餌量、摂水量、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データについて、対照群と各投与群との間で統計解析を行った。先ず、Bartlett 検定により分散性の検定を行った（有意水準：両側 1%）。分散が等しい場合は Dunnett 法を用いて、非等分散の場合は Dunnett 型の mean rank test を用いて、対照群と各投与群との間で検定を行った（有意水準：両側 5 及び 1%）。なお、回復群については、F 検定により各群の分散の均一性の検定（有意水準：片側 5%）を行った。その結果、等分散性が認められた場合には対照群と被験物質投与群との平均値の差について Student の t 検定（有意水準：両側 5 及び 1%）を、等分散性が認められなかった場合には Aspin-Welch の t 検定（有意水準：両側 5 及び 1%）を行った[2) -6)]。

7. 試験結果

7.1 一般状態の観察

成績を Table 1-1~1-3 及び Appendix 1~10 に示した。

1) 投与期間

流涎が 100 mg/kg 投与群の雌で投与 16 日以降に散見された。また、粗毛が 100 mg/kg 投与群の雌 2/12 例で、削痩が 100 mg/kg 投与群の雌 1/12 例でいずれも投与 24 日以降に認められた。

2) 回復期間

いずれの動物においても、回復期間を通じて異常は認められなかった。

7.2 詳細な一般状態の観察、機能検査、握力及び自発運動量

7.2.1 詳細な一般状態の観察

成績を Table 2-1~2-18 及び Appendix 11~70 に示した。

1) 投与期間

(1) 投与 1 週

いずれの検査項目においても異常はなく、各被験物質投与群の雌雄と対照群との間に有意差は認められなかった。

(2) 投与 2 週

手に持っての観察において軽度の流涎が 100 mg/kg 投与群の雌 1/12 例でみられ、また、オープンフィールド内観察において立ち上がり回数の有意な低値が 100 mg/kg 投与群の雌で認められた。

(3) 投与 3 週

手に持っての観察において軽度あるいは中等度の流涎が 100 mg/kg 投与群の雌 3/12 例でみられ、また、オープンフィールド内観察において立ち上がり回数の有意な低値が 100 mg/kg 投与群の雌で認められた。

(4) 投与 4 週

手に持っての観察において軽度な粗毛が 100 mg/kg 投与群の雌 2/12 例、軽度の流涎が 100 mg/kg 投与群の雌 4/12 例でみられ、また、オープンフィールド内観察において立ち上がり回数の有意な低値が 100 mg/kg 投与群の雌で認められた。

2) 回復期間

(1) 回復 1 週

オープンフィールド内観察において立ち上がり回数の有意な低値が 100 mg/kg 投与群の雄で認められた。

(2) 回復 2 週

いずれの検査項目においても異常はなく、100 mg/kg 投与群の雌雄と対照群との間に有意差は認められなかった。

7.2.2 機能検査

成績を Table 2-19、2-20 及び Appendix 71~76 に示した。

1) 投与 4 週

聴覚反応において弱い反応を示す動物が 100 mg/kg 投与群の雄 3/12 例で、また、痛覚反応において弱く反応する動物が 100 mg/kg 投与群の雌 1/12 例で認められた。

2) 回復 2 週

いずれの検査項目においても異常はなく、100 mg/kg 投与群の雌雄と対照群との間に有意差は認められなかった。

7.2.3 握力

成績を Table 2-21、2-22 及び Appendix 77~82 に示した。

1) 投与 4 週

前肢の有意な低値が 100 mg/kg 投与群の雌で認められた。

2) 回復 2 週

前肢及び後肢の有意な低値が 100 mg/kg 投与群の雌雄で認められた。

7.2.4 自発運動量

成績を Fig. 1~4、Table 2-23、2-24 及び Appendix 83~88 に示した。

1) 投与 4 週

測定開始後 20~30 分の測定値において有意な高値が 20 mg/kg 投与群の雌と 100 mg/kg 投与群の雄で有意な低値が、測定開始後 0~10 分及び 10~20 分の測定値において有意な低値が 100 mg/kg 投与群の雌雄でみられた。更に、100 mg/kg 投与群の雄では測定開始後 0~60 分の測定値にも有意な低値が認められた。

2) 回復 2 週

測定開始後 40~50 分の測定値において有意な高値が 100 mg/kg 投与群の雌で認められた。

7.3 体重

成績を Fig.5、Table 3-1、3-2 及び Appendix 89~94 に示した。

1) 投与期間

有意な低値が 100 mg/kg 投与群の雄で投与 4 から 28 日、雌で投与 10 から 28 日に認められた。更に、100 mg/kg 投与群の雌雄では投与期間中の体重増加量でも有意な低値が認められた。

2) 回復期間

有意な低値が 100 mg/kg 投与群の雌雄で回復 1 から 14 日に認められた。

7.4　摂餌量

成績を Fig.6、7、Table 4-1、4-2 及び Appendix 95~100 に示した。

1)　投与期間

有意な低値が 100 mg/kg 投与群の雌雄で投与 7 から 28 日に認められた。

2)　回復期間

有意な低値が 100 mg/kg 投与群の雌雄で回復 7 日に認められた。

7.5　尿検査（摂水量含む）

成績を Table 5-1~5-8 及び Appendix 101~118 に示した。

1)　投与 4 週

沈渣において小円形上皮細胞の陽性例が対照群の雌 1/12 例、20 mg/kg 投与群の雄 1/6 例、100 mg/kg 投与群の雄 4/12 例、雌 2/12 例でみられ、100 mg/kg 投与群の雄で発現頻度の増加傾向が認められた。また、摂水量及び尿量の有意な高値と浸透圧の有意な低値が 100 mg/kg 投与群の雌雄で認められた。

2)　回復 2 週

沈渣において小円形上皮細胞の陽性例が、100 mg/kg 投与群の雌雄各 2/6 例でみられ発現頻度の増加傾向が認められた。また、尿量の有意な高値が 100 mg/kg 投与群の雌で、浸透圧の有意な低値が 100 mg/kg 投与群の雌雄で認められた。

7.6　血液学検査

成績を Table 6-1~6-6 及び Appendix 119~136 に示した。

1)　投与期間終了時

赤血球数の有意な低値が 4 mg/kg 投与群の雄と 20 mg/kg 投与群の雌で、ヘモグロビン量と平均赤血球血色素濃度の有意な高値が 100 mg/kg の投与群の雌で、網赤血球率の有意な低値と血小板数の有意な高値が 100 mg/kg 投与群の雌雄で、活性化部分トロンボプラスチン時間の有意な延長が 100 mg/kg 投与群の雌で、また、白血球百分率でリンパ球比率の有意な低値が 4 mg/kg 投与群の雌で認められた。

2)　回復期間終了時

網赤血球率の有意な高値が 100 mg/kg 投与群の雌雄で、血小板数の有意な高値とフィブリノーゲン量の有意な低値が 100 mg/kg 投与群の雄で認められた。また、白血球百分率で好塩基球比率と分画実数で好塩基球の有意な低値が 100 mg/kg 投与群の雄で認められた。

7.7　血液化学検査

成績を Table 7-1~7-4 及び Appendix 137~148 に示した。

1)　投与期間終了時

AST 及びクレアチニンの有意な低値が 100 mg/kg の投与群の雌で、総コレステロールとリン脂質の有意な高値が 100 mg/kg 投与群の雌雄で、トリグリセライドの有意な

高値が 4 mg/kg 投与群の雄で、尿素窒素の有意な低値が 20 mg/kg 投与群の雌で、無機リンの有意な低値が 4 mg/kg 投与群の雌で、総たん白質とアルブミンの有意な高値が 100 mg/kg 投与群の雄で認められた。

2) 回復期間終了時

無機リンの有意な高値が 100 mg/kg 投与群の雌雄で、グルコースの有意な低値が 100 mg/kg 投与群の雄で、総コレステロール及びリン脂質の有意な高値と総たん白質、アルブミン及び A/G 比の有意な低値が 100 mg/kg 投与群の雌で認められた。

7.8 器官重量

成績を Table 8-1~8-8 及び Appendix 149~172 に示した。

1) 投与期間終了時

最終体重の有意な低値が 100 mg/kg 投与群の雌雄で認められた。

脳 : 相対重量の有意な高値が 100 mg/kg 投与群の雌で認められた。

胸腺 : 絶対及び相対重量の有意な低値が 100 mg/kg 投与群の雌で認められた。

心臓 : 絶対重量の有意な低値が 100 mg/kg 投与群の雌雄で、相対重量の有意な低値が 100 mg/kg 投与群の雄で認められた。

肝臓 : 相対重量の有意な高値が 20 mg/kg 以上の投与群の雌雄で認められた。

脾臓 : 絶対重量の有意な低値が 100 mg/kg 投与群の雄で認められた。

腎臓 : 相対重量の有意な高値が 100 mg/kg 投与群の雌雄で認められた。

副腎 : 相対重量の有意な高値が 100 mg/kg 投与群の雄で認められた。

卵巣 : 絶対重量の有意な低値が 100 mg/kg 投与群で認められた。

2) 回復期間終了時

最終体重の有意な低値が 100 mg/kg 投与群の雌雄で認められた。

脳 : 相対重量の有意な高値が 100 mg/kg 投与群の雌雄で認められた。

胸腺 : 絶対重量の有意な低値が 100 mg/kg 投与群の雄で、相対重量の有意な高値が 100 mg/kg 投与群の雌で認められた。

心臓 : 絶対重量の有意な低値が 100 mg/kg 投与群の雌雄で、相対重量の有意な高値が 100 mg/kg 投与群の雄で認め

られた。

肝臓 : 絶対重量の有意な低値が 100 mg/kg 投与群の雄で、相対重量の有意な高値が 100 mg/kg 投与群の雌で認められた。

脾臓 : 相対重量の有意な高値が 100 mg/kg 投与群の雌で認められた。

腎臓 : 絶対重量の有意な低値が 100 mg/kg 投与群の雄で、相対重量の有意な高値が 100 mg/kg 投与群の雌雄で認められた。

副腎 : 絶対重量の有意な低値が 100 mg/kg 投与群の雄で、相対重量の有意な高値が 100 mg/kg 投与群の雌で認められた。

精巣 : 絶対重量の有意な低値と相対重量の有意な高値が 100 mg/kg 投与群で認められた。

精巣上体 : 絶対重量の有意な低値と相対重量の有意な高値が 100 mg/kg 投与群で認められた。

7.9 剖検所見

成績を Table 9-1、9-2 及び Appendix 173~244 に示した。

1) 投与期間終了時

外部所見 : 粗毛が 100 mg/kg 投与群の雌 2/6 例で、低栄養状態が 100 mg/kg 投与群の雌 1/6 例で認められた。

子宮 : 小型化が 100 mg/kg 投与群の 2/6 例で認められた。

2) 回復期間終了時

腎臓 : 腎盂拡張が 100 mg/kg 投与群の雌 1/6 例で認められた。

甲状腺 : 小型化が 100 mg/kg 投与群の雌 1/6 例で認められた。

7.10 病理組織学検査

成績を Table 10-1~10-6 及び Appendix 173~244 に示した。

1) 投与期間終了時

被験物質投与によると考えられる変化が副腎、大腿骨（骨髄を含む）、胸骨（骨髄を含む）、腎臓、肝臓、腸間膜リンパ節、脾臓、胃、胸腺、膀胱及び子宮で認められた。

副腎 : 軽微な球状帯のび漫性肥大が、20 mg/kg 投与群の雌 1 例、100 mg/kg 投与群の雄 3 例と雌 2 例でみられ、100 mg/kg 投与群の雌雄で発現頻度の増加傾向が認められた。

大腿骨（骨髄を含む）

: 軽微あるいは軽度な骨髄細胞密度の低下が 100 mg/kg

投与群の雄1例と雌2例で認められた。

胸骨（骨髄を含む） : 軽微な骨髄細胞密度の低下が100 mg/kg投与群の雄1例と雌2例で認められた。

腎臓 : 軽微~中等度の尿細管の好塩基性化が100 mg/kg投与群の雌雄各全例で、軽微な単細胞壊死が100 mg/kg投与群の雌雄各全例で認められた。

肝臓 : 軽微なクッパー細胞の色素沈着が100 mg/kg投与群の雄2例と雌1例で、軽微な肝細胞の単細胞壊死が100 mg/kg投与群の雄2例と雌1例で、軽微な小葉中心性の肝細胞肥大が20 mg/kg投与群の雄5例、100 mg/kg投与群の雄5例と雌全例で認められた。

腸間膜リンパ節 : 軽微な萎縮が100 mg/kg投与群の雌3例で認められた。

脾臓 : 軽微なリンパ濾胞の萎縮が100 mg/kg投与群の雌2例で認められた。

胃 : 軽微な腺胃のびらんが100 mg/kg投与群の雄2例で認められた。

胸腺 : 軽微~中等度な萎縮が100 mg/kg投与群の雄3例と雌4例で認められた。

膀胱 : 軽微な被蓋細胞の肥大が100 mg/kg投与群の雄4例と雌全例で認められた。

子宮 : 剖検において小型化が認められた100 mg/kg投与群の2例に軽度な萎縮が認められた。

以下に示す所見については、その出現状況あるいは病理組織学的性状からいずれも偶発性の変化と判断した。

腎臓 : 軽微な尿細管拡張が100 mg/kg投与群の雌1例で、軽微な再生尿細管が対照群の雄3例と雌1例、4 mg/kg投与群の雄1例、20 mg/kg投与群の雄3例と雌1例、100 mg/kg投与群の雄1例と雌2例で、軽微な皮髄境界部の鉱質沈着が4及び20 mg/kg投与群の雄各1例に、軽微な間質性の細胞浸潤が4 mg/kg投与群の雄1例、20 mg/kg投与群の雄2例と雌1例、100 mg/kg投与群の雌雄各1例に、腎芽腫が4 mg/kg投与群の雌1例で認められた。

肝臓 : 軽微あるいは軽度な辺縁帯の肝細胞の空胞化が対照群の雌雄各2例、4 mg/kg投与群の雌雄各3例、20 mg/kg投与群の雄1例と雌5例、100 mg/kg投与群の雌雄各1例で、軽微な髄外造血が100 mg/kg投与群の雄1例で、軽微な限局性の出血が20 mg/kg投与群の雄1例で、軽

微な微小肉芽腫が対照群の雄 4 例と雌全例、4 mg/kg 投与群の雄全例と雌 5 例、20 mg/kg 投与群の雌雄各 5 例、100 mg/kg 投与群の雄 4 例と雌 2 例で認められた。

肺（気管支を含む） : 軽微な肺胞マクロファージの出現が 100 mg/kg 投与群の雄 1 例で認められた。

前立腺 : 軽微あるいは軽度な間質性の細胞浸潤が対照群の 3 例、100 mg/kg 投与群の 2 例で認められた。

脾臓 : 軽微な髄外造血が対照群の雄 1 例、100 mg/kg 投与群の雄 3 例で認められた。

精巣 : 軽微な精細管の萎縮が 100 mg/kg 投与群の 1 例で認められた。

甲状腺 : 軽微な異所性胸腺が対照群の雄 1 例、100 mg/kg 投与群の雌 1 例で、軽微な鰓後体遺残が対照群の雌雄各 1 例、100 mg/kg 投与群の雄 1 例と雌 3 例で認められた。

2) 回復期間終了時

被験物質投与によると考えられる変化が副腎、腎臓及び肝臓で認められた。

副腎 : 軽微な球状帯のび漫性肥大が対照群の雄 1 例、100 mg/kg 投与群の雄 3 例と雌 1 例でみられ、100 mg/kg 投与群の雄で発現頻度の増加傾向が認められた。

腎臓 : 軽微あるいは軽度な尿細管の好塩基性化が 100 mg/kg 投与群の雌雄各全例に（剖検において腎盂拡張がみられた 100 mg/kg 投与群の雌 1 例を含む）認められた。

肝臓 : 軽微なクッパー細胞の色素沈着が 100 mg/kg 投与群の雄 4 例で、軽微な小葉中心性の肝細胞肥大が 100 mg/kg 投与群の雄 3 例と雌 1 例で認められた。

以下に示す所見については、その出現状況あるいは病理組織学的性状からいずれも偶発性の変化と判断した。

腎臓 : 剖検において腎盂拡張が認められた 100 mg/kg 投与群の雌 1 例で中等度な腎盂拡張と軽度な再生尿細管が認められた。また、軽微な再生尿細管が対照群の雄 2 例、100 mg/kg 投与群の雄 1 例で、軽微な皮髄境界部の鉱質沈着が対照群の雌 1 例で、軽微な間質性な細胞浸潤が対照群の雄 2 例、100 mg/kg 投与群の雄 3 例で認められた。

肝臓 : 軽微あるいは軽度な辺縁帯の肝細胞の空胞化が対照群の雌 3 例で、軽微な髄外造血が 100 mg/kg 投与群の雌雄各 1 例で、軽微な微小肉芽腫が対照群の雄 3 例と雌 5 例、100 mg/kg 投与群の雄 5 例と雌 4 例で認められた。

脾臓	:	軽微な髄外造血が対照群及び 100 mg/kg 投与群の雌各 1 例で認められた。
甲状腺	:	剖検において小型化が認められた 100 mg/kg 投与群の雌 1 例で軽微な異所性胸腺と鰓後体遺残がみられたが、小型化に相当する所見は認められなかった。

8. 考察

アセナフチレンの 28 日間反復経口投与毒性試験を 6 週齢の Sprague-Dawley 系 SPF ラット〔Crl:CD(SD)、1 群雌雄各 6 又は 12 匹〕を用いて実施した。投与量は 0（0.5 w/v% メチルセルロース水溶液：対照群）、4、20 及び 100 mg/kg とし、また、対照群と 100 mg/kg 投与群の一部の個体（1 群雌雄各 6 匹）については投与期間終了後 2 週間の休薬期間を設け、毒性変化の可逆性を検討した。

詳細な観察を含む一般状態では、100 mg/kg 投与群の雌で流涎が散見されたほか、一部で粗毛及び削痩も認められた。更に、オープンフィールド内観察に立ち上がり回数の低値も認められた。なお、これらの変化は休薬により消失した。その他、回復期間中に 100 mg/kg 投与群の雄でオープンフィールド内観察に立ち上がり回数の低値がみられたが、投与期間中には同様な変化は認められていないことから偶発性と判断した。

機能検査、握力及び自発運動量では、100 mg/kg 投与群の雄で聴覚に、100 mg/kg 投与群の雌で痛覚に弱い反応の動物が散見された。また、100 mg/kg 投与群の雌で前肢握力の低値が、100 mg/kg 投与群の雌雄で自発運動量の低値がみられた。これらの変化は病理学検査では中枢及び末梢神経系に異常はみられていないものの被験物質投与の影響が疑われた。なお、回復 2 週においても 100 mg/kg 投与群の雌雄で前肢及び後肢握力の低値が認められた。その他、自発運動量について 20 mg/kg 投与群の雌で高値が投与 4 週に、100 mg/kg 投与群の雌で高値が回復 2 週に認められたが、いずれもごく軽度で一時的な変化であることから偶発性と判断した。

体重及び摂餌量では、低値が 100 mg/kg 投与群の雌雄でみられ、体重増加量も低値を示し、増加抑制が認められた。回復期間中においても 100 mg/kg 投与群の雌雄で低値がみられたが、体重増加量及び回復 14 日の摂餌量には対照群と差がなく休薬による回復性が認められた。

尿検査（摂水量を含む）では、沈渣において小円形上皮細胞の陽性例の発現頻度の増加傾向が 100 mg/kg 投与群の雄で、摂水量及び尿量の高値並びに浸透圧の低値が 100 mg/kg 投与群の雌雄でみられ、被験物質投与による腎臓への影響が疑われた。なお、回復 2 週においても沈渣で小円形上皮細胞の陽性例の発現頻度の増加傾向及び尿量の高値あるいは浸透圧の低値が 100 mg/kg 投与群の雌雄でみられ、休薬による回復性は認められなかった。

血液学検査では、網赤血球率の低値及び血小板数の高値が 100 mg/kg 投与群の雌雄で、ヘモグロビン量及び平均赤血球血色素濃度の高値並びに活性化部分トロンボプラスチン時間の延長が 100 mg/kg 投与群の雌でみられ、いずれの変化も発現機序は明らかではないものの被験物質投与の影響が疑われた。なお、回復期間終了時においても血小板数の高値が 100 mg/kg 投与群の雄でみられたものの程度は軽減し、網赤血球率も増加に転じていることから、休薬により回復性が認められた。その他、赤血球数の

低値が 4 mg/kg 投与群の雄と 20 mg/kg 投与群の雌で、白血球百分率でリンパ球比率の低値が 4 mg/kg 投与群の雌でみられたが、いずれもごく軽度で高用量群には同様な変化は認められていないことから偶発性と判断した。また、回復期間終了時にフィブリノーゲン量及び白血球百分率と実数で好塩基球の低値が 100 mg/kg 投与群の雄でみられたが、いずれもごく軽度で投与期間終了時には同様な変化は認められていないことから偶発性と判断した。

血液化学検査では、総コレステロールとリン脂質の高値が 100 mg/kg 投与群の雌雄で、総たん白質及びアルブミンの高値が 100 mg/kg 投与群の雄でみられ、被験物質投与による肝臓への影響が疑われた。回復期間終了時においても総コレステロール及びリン脂質の高値が 100 mg/kg 投与群の雌でみられたものの程度は軽減していることから、休薬による回復性が認められた。その他、投与期間終了時に AST 及びクレアチニンの低値が 100 mg/kg の投与群の雌でみられたが、ごく軽度であり、障害を示唆するとされる高値ではないことから、重要ではないと判断した。また、トリグリセライドの高値が 4 mg/kg 投与群の雄で、尿素窒素の低値が 20 mg/kg 投与群の雌で、無機リンの低値が 4 mg/kg 投与群の雌でみられたが、いずれもごく軽度で高用量群には同様な変化は認められてないことから偶発性と判断した。更に、回復期間終了時に、無機リンの高値が 100 mg/kg 投与群の雌雄で、グルコースの低値が 100 mg/kg 投与群の雄で、総たん白質、アルブミン及び A/G 比の低値が 100 mg/kg 投与群の雌でみられたが、いずれもごく軽度で投与期間終了時には同様な変化は認められていないことから偶発性と判断した。

病理学検査では、剖検で粗毛、低栄養状態及び子宮の小型化が 100 mg/kg 投与群の雌でみられ、組織学的変化としては肝臓の小葉中心性の肝細胞肥大が 20 mg/kg 以上の投与群の雄及び 100 mg/kg 投与群の雌で、クッパー細胞の色素沈着及び単細胞壊死が 100 mg/kg 投与群の雌雄で認められた。更に、胸腺の萎縮、大腿骨（骨髄を含む）と胸骨（骨髄を含む）の骨髄細胞密度の低下、腎臓の尿細管の好塩基性化及び単細胞壊死、膀胱の被蓋細胞の肥大並びに副腎の球状帯のび漫性肥大の発現頻度の増加傾向が 100 mg/kg 投与群の雌雄で、腺胃のびらんが 100 mg/kg 投与群の雄で、腸間膜リンパ節、脾臓のリンパ嚢胞及び子宮の萎縮が 100 mg/kg 投与群の雌で認められた。また、重量の変化としては肝臓の相対重量の高値が 20 mg/kg 以上の投与群の雌雄で、心臓の絶対重量の低値が 100 mg/kg 投与群の雌雄で、相対重量の低値が 100 mg/kg 投与群の雄で、胸腺の絶対及び相対重量の低値が 100 mg/kg 投与群の雌で、脾臓の絶対重量の低値が 100 mg/kg 投与群の雄で、卵巣の絶対重量の低値が 100 mg/kg 投与群で認められた。回復期間終了時には、組織学的変化として、肝臓の小葉中心性の肝細胞肥大が 100 mg/kg 投与群の雌雄で、クッパー細胞の色素沈着が 100 mg/kg 投与群の雄で、腎臓の尿細管の好塩基性化が 100 mg/kg 投与群の雌雄で、副腎の球状帯のび漫性肥大の発現頻度の増加傾向が 100 mg/kg 投与群の雄で認められたが、副腎の変化を除いてはいずれも投与期間終了時より軽減するか消失し、回復性が示唆された。なお、100 mg/kg 投与群で認められた投与期間終了時の脳、腎臓及び副腎の相対重量の高値、回復期間終了時

の胸腺、心臓、肝臓、腎臓、副腎、精巣及び精巣上体の絶対重量の低値と相対重量の高値並びに脳及び脾臓の相対重量の高値については、体重が増加抑制されたことに伴った変化と考えられた。また、剖検で回復期間終了時に腎盂拡張及び甲状腺の小型化が 100 mg/kg 投与群の雌にみられたが、発現状況から偶発性と判断した。

以上の結果、アセナフチレンの本試験条件下における無影響量は主として病理学検査における雌雄の肝臓重量の高値及び雄の小葉中心性の肝細胞肥大から 4 mg/kg/day と推定された。なお、回復期間中あるいは回復期間終了時にも雌雄の握力及び尿検査に、雄の病理学検査の副腎に変化がみられたものの、その他についてはいずれも消失あるいは軽減し、回復性を示した。

9. 文献

1) [redacted]アセナフチレ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-B450、2009 年）
2) Snedecor GW, Cochran WG. Statistical methods.8th ed. Ames: Iowa State University Press;1989.
3) Dunnett CW. A multiple comparison procedure for comparing several treatments with a control.J Am Stat Assoc 1955; 50:1096-121.
4) Dunnett CW. New tables for multiple comparisons with a control. Biometrics 1964; 20:482-91.
5) 佐久間昭（1977）：薬効評価－計画と解析－I 東京大学出版会, 東京.
6) 佐久間昭（1981）：薬効評価－計画と解析－II 東京大学出版会, 東京.

B-6582
添付資料　1

検　査　成　績　書

2008年10月28日

株式会社　ボゾリサーチセンター
御殿場研究所　研究部　第１部　　御中

新日鐵化学株式会社
九州製造所
環境・安全・品質保証室

品　　名	アセナフチレン	
出荷年月日	2008年10月28日	
ロット番号	7-MOM	
検査項目	規格値	検査結果
アセナフチレン（%）	93.5以上98.5以下	96.3
ナフタレン（%）	1.0以下	0.1
1－メチルナフタレン（%）	1.5以下	0.2
1－ビニルナフタレン（%）	0.1以下	ND
アセナフテン（%）	1.5以上5.0以下	3.3
その他（%）	0.4以下	0.2
水分（ppm）	500以下	156
メタノール不溶分（ppm）	500以下	200
Fe（ppb）	100以下	50未満(22)
Si（ppb）	100以下	50未満(23)
Li（ppb）	100以下	50未満(1未満)
Na（ppb）	100以下	50未満(4)
K（ppb）	100以下	50未満(1未満)
Mg（ppb）	100以下	50未満(2)
Cu（ppb）	100以下	50未満(1未満)
Ca（ppb）	100以下	50未満(17)
Al（ppb）	100以下	50未満(2)
Mn（ppb）	100以下	50未満(1未満)
Sn（ppb）	100以下	50未満(1未満)
Ni（ppb）	100以下	50未満(1未満)
Cr（ppb）	100以下	50未満(1未満)
Ti（ppb）	100以下	50未満(1未満)
Zn（ppb）	100以下	50未満(2)
Pd（ppb）	100以下	50未満(1未満)
Zr（ppb）	100以下	50未満(3)

備　考	判定者	合　否
※金属分については参考値としてカッコ内に記載	[redacted]	合　格

【問合せ】

B-6582
添付資料　2

検　査　成　績　書

2009年9月15日

株式会社ボゾリサーチセンター

御中

新日鐵化学株式会社
九州製造所
環境・安全・品質保証室

品　　名	アセナフチレン	
試 験 年 月 日	2009年9月15日	
ロ ッ ト 番 号	7-MOM	
検　査　項　目	規　格　値	検　査　結　果
アセナフチレン（%）	93.5以上98.5以下	96.3
ナフタレン（%）	1.0以下	0.1
1－メチルナフタレン（%）	1.5以下	0.3
1－ビニルナフタレン（%）	0.1以下	ND
アセナフテン（%）	1.5以上5.0以下	3.3
その他（%）	0.4以下	ND
備　考	判 定 者	合　否
	[redacted]	合 格

【問合せ】

B-6582
添付資料　3-1

A-2171

被験液中アセナフチレンの安定性・均一性試験成績書

試験番号	:	A-2171
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11月19日　調製直後 2008年11月28日　冷所8日間+室温24時間保存後
測定法	:	HPLC
被験物質	:	アセナフチレン（ロット番号：7-MOM）
媒体	:	0.5 w/v%メチルセルロース400cP溶液
調製濃度	:	0.100及び200 mg/mL
調製形態	:	懸濁液
調製日	:	2008年11月19日
保存条件		褐色ガラスビンにて、冷所（冷蔵庫内、許容値：1～10°C）及び室温保存
測定対象物質	:	アセナフチレン
評価基準		
安定性	:	保存した被験液の残存率〔調製直後（100）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	:	調製直後及び保存した被験液の変動係数（CV）が10%以下。
結果	:	次ページ参照
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12月9日

結果：被験液中アセナフチレ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 8 日間+ 室温 24 時間保存
0.100	0.0900	0.0973
	0.0910	0.0957
	0.0988	0.102
平均値	0.0933	0.0985
標準偏差	0.0048	0.0035
残存率（%）	100	105.6
変動係数（%）	5.1	3.6
200	190	206
	188	204
	203	225
平均値	194	212
標準偏差	8	11
残存率（%）	100	109.3
変動係数（%）	4.1	5.2

平均値及び標準偏差はミレニアム ^{32}クロマトグラフィーマネジャーにより計算した。

B-6582
添付資料　4-1

アセナフチレンの被験液中濃度・均一性測定成績書

試験番号　：　B-6582
測定実施施設　：　株式会社ボゾリサーチセンター　御殿場研究所
ステージ　：　投与1週
測定開始日　：　2009年7月6日
測定方法　：　HPLC

被験液
　被験物質　：　アセナフチレン（ロット番号：7-MOM）
　媒体　：　0.5 w/v%メチルセルロース水溶液
　表示値　：　0.8、4及び20 mg/mL
　調製形態　：　懸濁液
　調製年月日　：　2009年7月6日

測定対象物質　：　アセナフチレン

判定基準　：　濃度許容範囲；表示値に対する割合；100 ± 10%
均一性許容濃度；CV10%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 (%)	CV (%)
0.8	上層	0.831	0.832 ± 0.005	104.0	0.6
	中層	0.838			
	下層	0.828			
4	上層	4.20	4.23 ± 0.03	105.8	0.7
	中層	4.25			
	下層	4.25			
20	上層	21.3	21.3 ± 0.4	106.5	1.9
	中層	21.6			
	下層	20.9			

平均値及び標準偏差はミレニアム^{32}クロマトグラフィーマネジャーを用いて算出した。

判定　：　適

化学分析責任者　：　[redacted]　2009年　7月　10日

B-6582
添付資料　4-2

アセナフチレンの被験液中濃度・均一性測定成績書

試験番号　：　B-6582
測定実施施設　：　株式会社ボゾリサーチセンター　御殿場研究所
ステージ　：　投与4週
測定開始日　：　2009年7月30日
測定方法　：　HPLC

被験液
被験物質　：　アセナフチレン（ロット番号：7-MOM）
媒体　：　0.5 w/v%メチルセルロース水溶液
表示値　：　0.8、4及び20 mg/mL
調製形態　：　懸濁液
調製年月日　：　2009年7月30日

測定対象物質　：　アセナフチレン

判定基準　：　濃度許容範囲；表示値に対する割合；100 ± 10%
均一性許容濃度；CV10%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 (%)	CV (%)
0.8	上層	0.804	0.801 ± 0.005	100.1	0.6
	中層	0.803			
	下層	0.795			
4	上層	4.05	4.06 ± 0.03	101.5	0.7
	中層	4.04			
	下層	4.09			
20	上層	20.9	20.9 ± 0.4	104.5	1.9
	中層	20.5			
	下層	21.3			

平均値及び標準偏差はミレニアム^{32}クロマトグラフィーマネジャーを用いて算出した。

判定　：　適

化学分析責任者　：　[redacted]　2009年　7月　31日

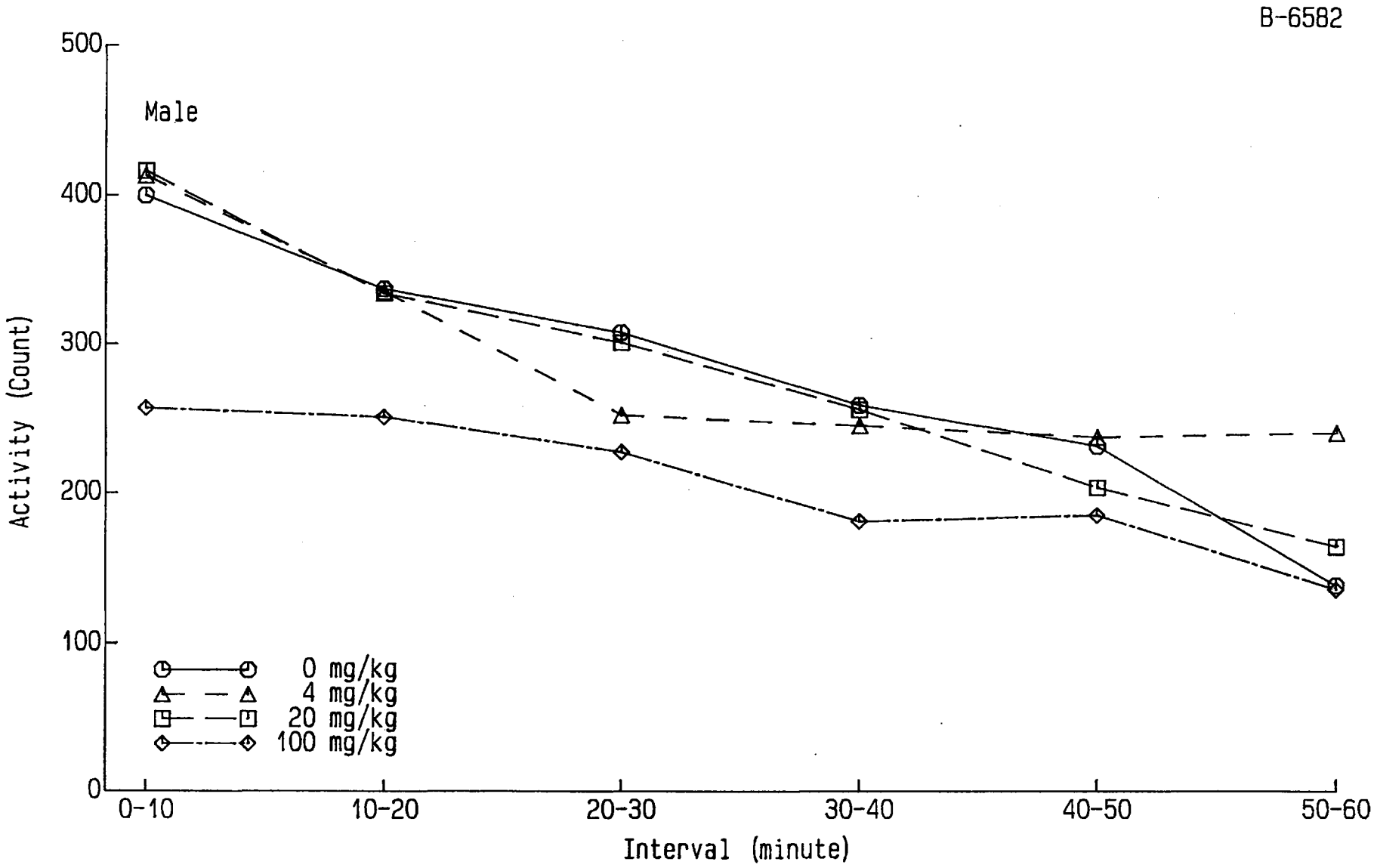


Fig.1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

——— Motor activity (Week 4 of administration period) ———

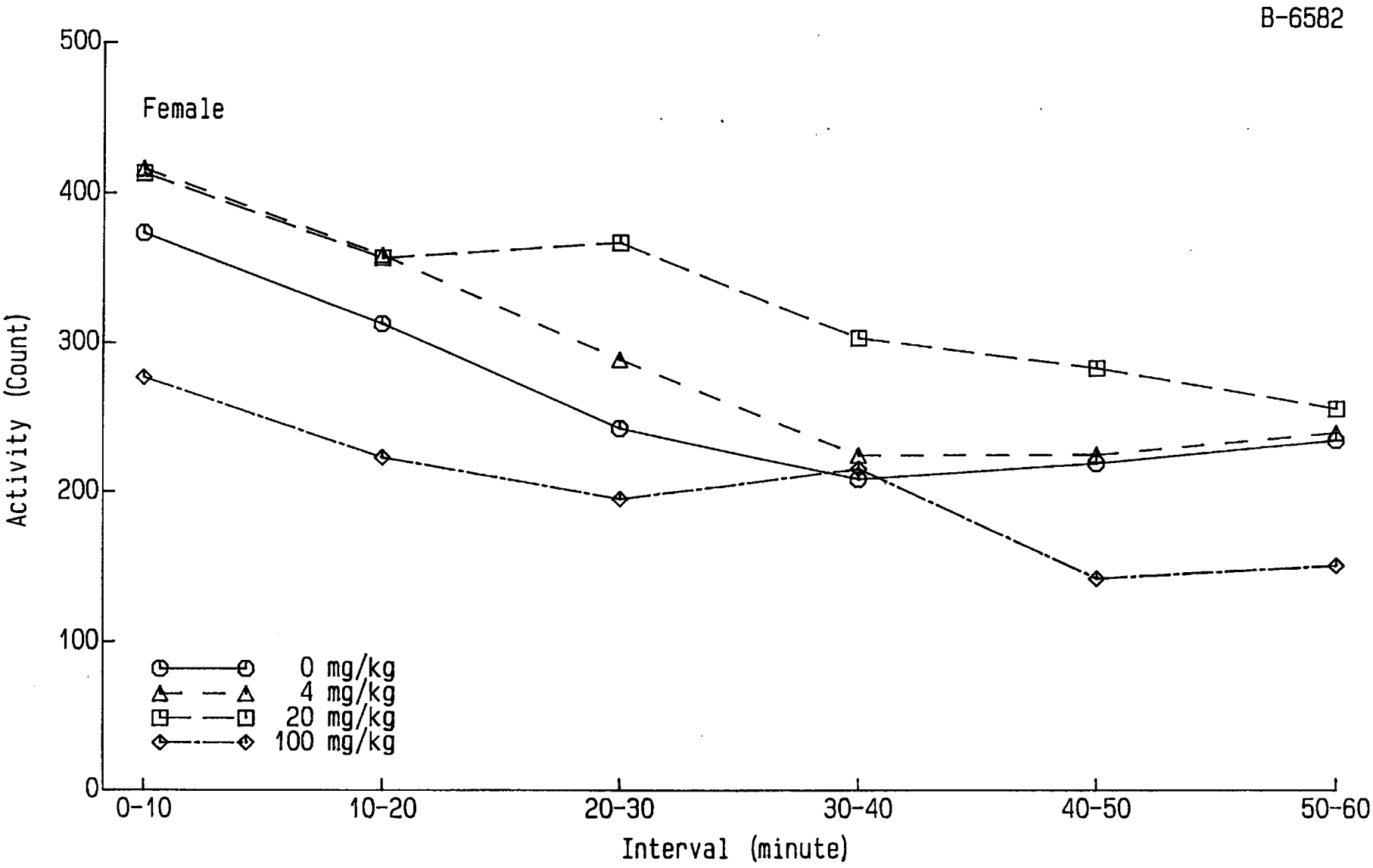


Fig.2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

——— Motor activity (Week 4 of administration period) ———

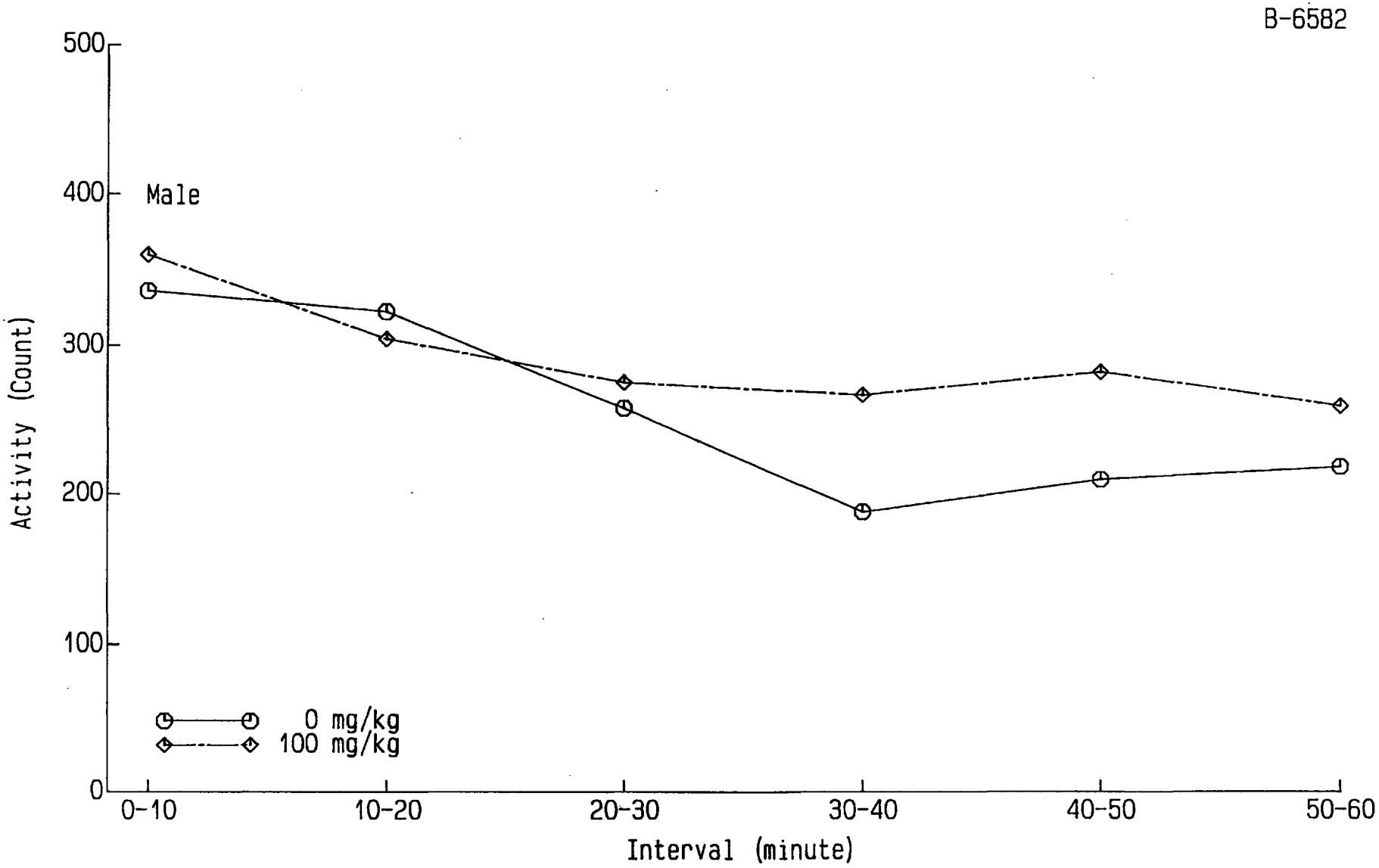


Fig.3 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

——— Motor activity (Week 2 of recovery period) ———

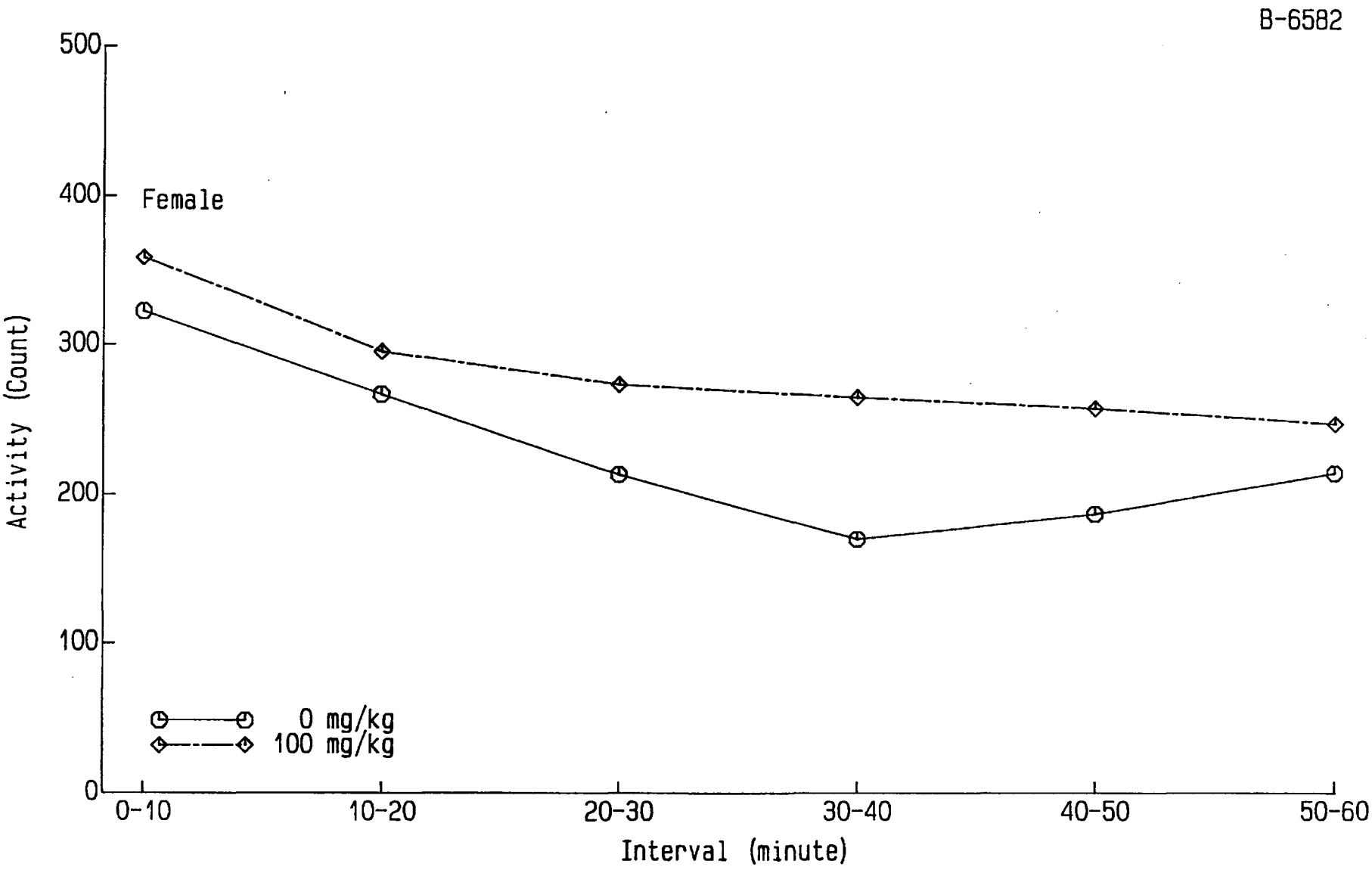


Fig.4 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

——— Motor activity (Week 2 of recovery period) ———

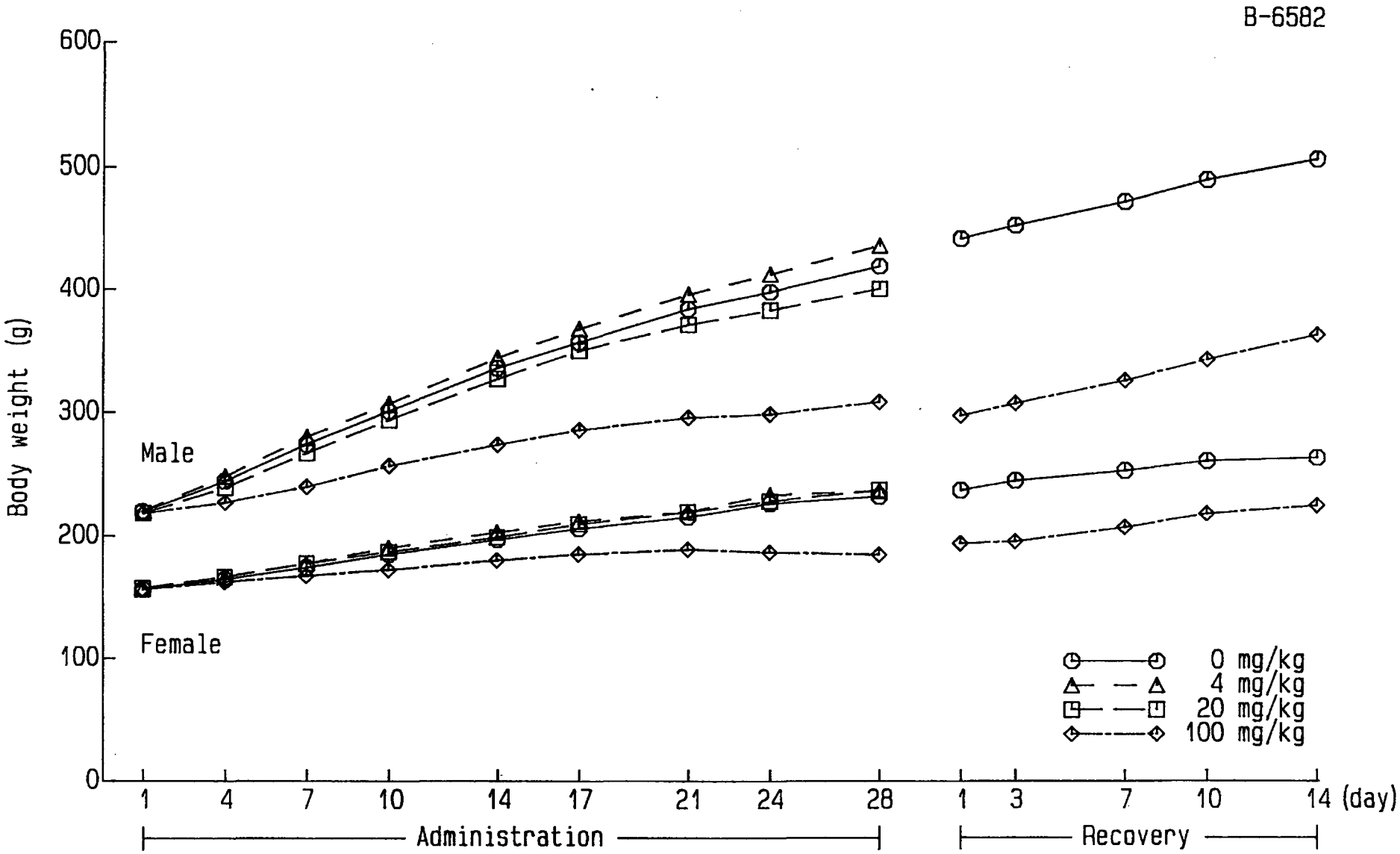


Fig.5 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

——— Body weight ———

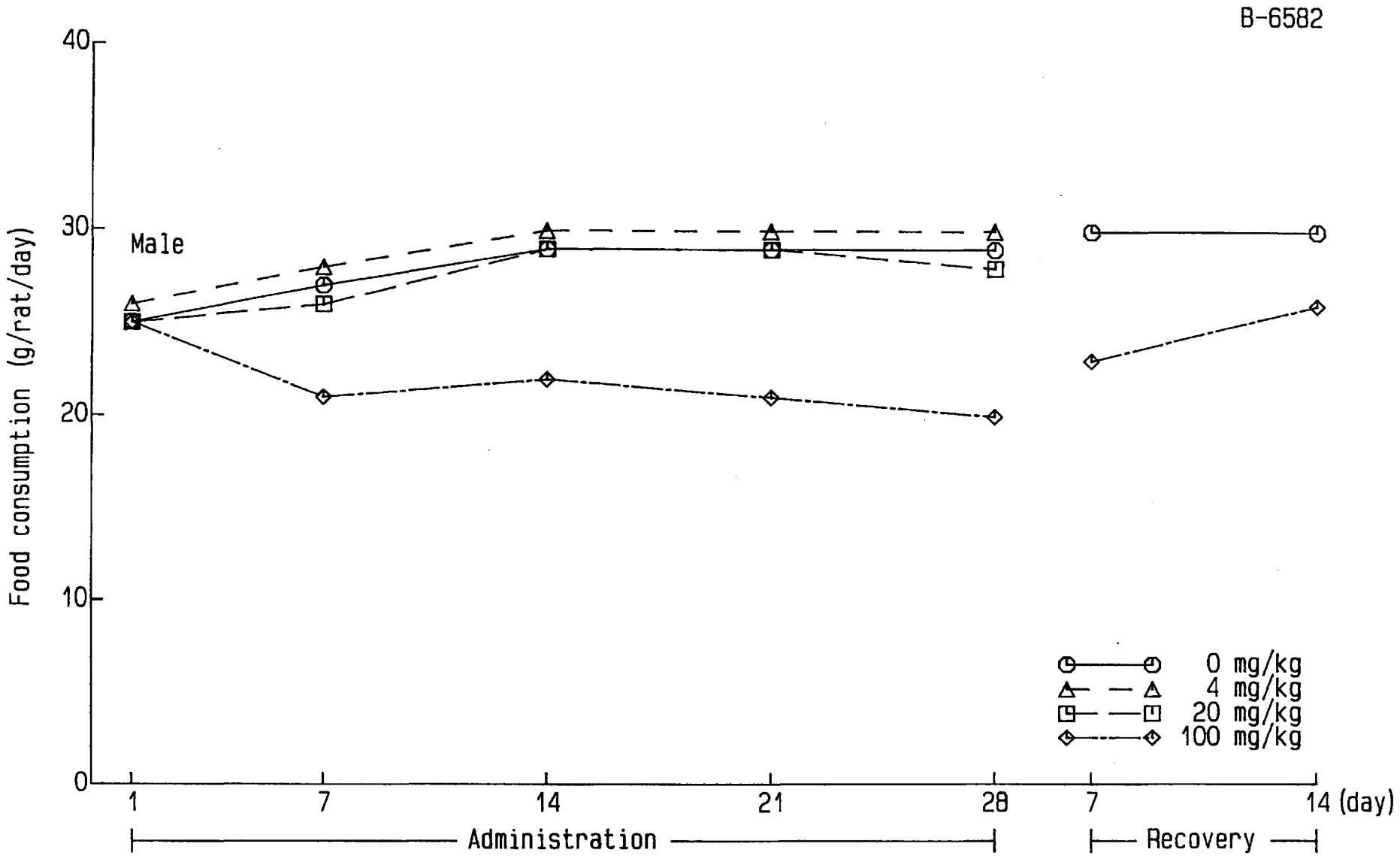


Fig.6 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

——— Food consumption ———

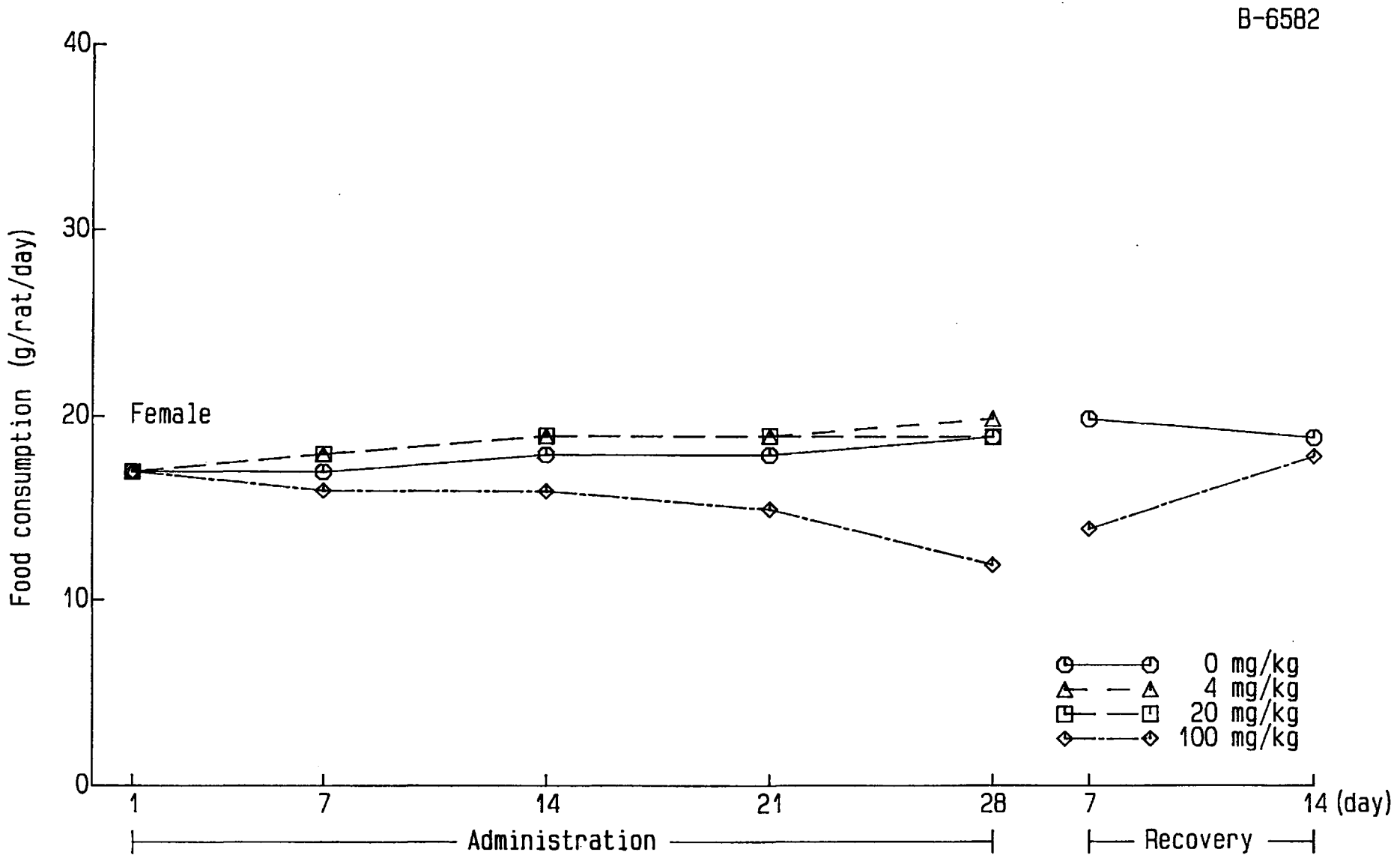


Fig.7 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

——— Food consumption ———

Table 1-1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Clinical signs (Administration period)

Sex	Dose mg/kg	Findings	Day of administration													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
Male	0	No. of animals	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		No abnormality	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	4	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	100	No. of animals	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		No abnormality	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Female	0	No. of animals	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		No abnormality	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	4	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	100	No. of animals	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		No abnormality	12	12	12	12	12	12	12	12	12	12	12	12	12	12

Table 1-2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Clinical signs (Administration period)

Sex	Dose mg/kg	Findings	Day of administration													
			15	16	17	18	19	20	21	22	23	24	25	26	27	28
Male	0	No. of animals	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		No abnormality	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	4	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	100	No. of animals	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		No abnormality	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Female	0	No. of animals	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		No abnormality	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	4	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	20	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	100	No. of animals	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		No abnormality	12	11	11	12	10	12	11	11	10	8	10	8	10	8
		Salivation	0	1	1	0	2	0	1	1	2	2	0	2	0	2
		Unkempt fur	0	0	0	0	0	0	0	0	0	2	2	2	2	2
		Emaciation	0	0	0	0	0	0	0	0	0	1	1	1	1	1

Table 1-3 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Clinical signs (Recovery period)

Sex	Dose mg/kg	Findings	Day of recovery													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
Male	0	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	100	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Female	0	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	100	No. of animals	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No abnormality	6	6	6	6	6	6	6	6	6	6	6	6	6	6

Table 2-1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : home cage observations (Week 1 of administration period)

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Posture									
Normal		12	6	6	12	12	6	6	12
Convulsion									
None		12	6	6	12	12	6	6	12
Abnormal behavior									
None		12	6	6	12	12	6	6	12

Table 2-2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : home cage observations (Week 2 of administration period)

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Posture									
Normal		12	6	6	12	12	6	6	12
Convulsion									
None		12	6	6	12	12	6	6	12
Abnormal behavior									
None		12	6	6	12	12	6	6	12

Table 2-3 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : home cage observations (Week 3 of administration period)

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Posture									
Normal		12	6	6	12	12	6	6	12
Convulsion									
None		12	6	6	12	12	6	6	12
Abnormal behavior									
None		12	6	6	12	12	6	6	12

Table 2-4 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : home cage observations (Week 4 of administration period)

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Posture									
Normal		12	6	6	12	12	6	6	12
Convulsion									
None		12	6	6	12	12	6	6	12
Abnormal behavior									
None		12	6	6	12	12	6	6	12

Table 2-5 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : home cage observations (Week 1 of recovery period)

	Sex	Male		Female	
	Dose (mg/kg)	0	100	0	100
Parameter	No. of animals	6	6	6	6
Posture					
Normal		6	6	6	6
Convulsion					
None		6	6	6	6
Abnormal behavior					
None		6	6	6	6

Table 2-6 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : home cage observations (Week 2 of recovery period)

	Sex	Male		Female	
	Dose (mg/kg)	0	100	0	100
Parameter	No. of animals	6	6	6	6
Posture					
Normal		6	6	6	6
Convulsion					
None		6	6	6	6
Abnormal behavior					
None		6	6	6	6

Table 2-7 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

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

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Ease of removal from cage									
Easy		12	6	6	12	12	6	6	12
Fur condition									
Normal		12	6	6	12	12	6	6	12
Skin									
Normal		12	6	6	12	12	6	6	12
Secretions-Eye, Nose									
Absent		12	6	6	12	12	6	6	12
Exophthalmos									
Absent		12	6	6	12	12	6	6	12
Palpebral closure									
Normal		12	6	6	12	12	6	6	12
Mucosal membranes									
Normal		12	6	6	12	12	6	6	12
Lacrimation									
Normal		12	6	6	12	12	6	6	12
Piloerection									
Absent		12	6	6	12	12	6	6	12
Pupil size									
Normal		12	6	6	12	12	6	6	12
Salivation									
None		12	6	6	12	12	6	6	12
Abnormal respiration									
Absent		12	6	6	12	12	6	6	12
Reactivity to handling									
Easy		12	6	6	12	12	6	6	12

Table 2-8 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

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

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Ease of removal from cage									
Easy		12	6	6	12	12	6	6	12
Fur condition									
Normal		12	6	6	12	12	6	6	12
Skin									
Normal		12	6	6	12	12	6	6	12
Secretions-Eye, Nose									
Absent		12	6	6	12	12	6	6	12
Exophthalmos									
Absent		12	6	6	12	12	6	6	12
Palpebral closure									
Normal		12	6	6	12	12	6	6	12
Mucosal membranes									
Normal		12	6	6	12	12	6	6	12
Lacrimation									
Normal		12	6	6	12	12	6	6	12
Piloerection									
Absent		12	6	6	12	12	6	6	12
Pupil size									
Normal		12	6	6	12	12	6	6	12
Salivation									
None		12	6	6	12	12	6	6	11
Slight		0	0	0	0	0	0	0	1
Abnormal respiration									
Absent		12	6	6	12	12	6	6	12
Reactivity to handling									
Easy		12	6	6	12	12	6	6	12

Table 2-9 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

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

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Ease of removal from cage									
Easy		12	6	6	12	12	6	6	12
Fur condition									
Normal		12	6	6	12	12	6	6	12
Skin									
Normal		12	6	6	12	12	6	6	12
Secretions-Eye, Nose									
Absent		12	6	6	12	12	6	6	12
Exophthalmos									
Absent		12	6	6	12	12	6	6	12
Palpebral closure									
Normal		12	6	6	12	12	6	6	12
Mucosal membranes									
Normal		12	6	6	12	12	6	6	12
Lacrimation									
Normal		12	6	6	12	12	6	6	12
Piloerection									
Absent		12	6	6	12	12	6	6	12
Pupil size									
Normal		12	6	6	12	12	6	6	12
Salivation									
None		12	6	6	12	12	6	6	9
Slight		0	0	0	0	0	0	0	1
Moderate		0	0	0	0	0	0	0	2
Abnormal respiration									
Absent		12	6	6	12	12	6	6	12
Reactivity to handling									
Easy		12	6	6	12	12	6	6	12

Table 2-10 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

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

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Ease of removal from cage									
Easy		12	6	6	12	12	6	6	12
Fur condition									
Normal		12	6	6	12	12	6	6	10
Slight, unkempt fur		0	0	0	0	0	0	0	2
Skin									
Normal		12	6	6	12	12	6	6	12
Secretions-Eye, Nose									
Absent		12	6	6	12	12	6	6	12
Exophthalmos									
Absent		12	6	6	12	12	6	6	12
Palpebral closure									
Normal		12	6	6	12	12	6	6	12
Mucosal membranes									
Normal		12	6	6	12	12	6	6	12
Lacrimation									
Normal		12	6	6	12	12	6	6	12
Piloerection									
Absent		12	6	6	12	12	6	6	12
Pupil size									
Normal		12	6	6	12	12	6	6	12
Salivation									
None		12	6	6	12	12	6	6	8
Slight		0	0	0	0	0	0	0	4
Abnormal respiration									
Absent		12	6	6	12	12	6	6	12
Reactivity to handling									
Easy		11	6	5	12	12	5	6	12
Slightly awkward		1	0	1	0	0	0	0	0
Difficult		0	0	0	0	0	1	0	0

Table 2-11 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

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

	Sex	Male		Female	
	Dose (mg/kg)	0	100	0	100
Parameter	No. of animals	6	6	6	6
Ease of removal from cage					
Easy		6	6	6	6
Fur condition					
Normal		6	6	6	6
Skin					
Normal		6	6	6	6
Secretions-Eye, Nose					
Absent		6	6	6	6
Exophthalmos					
Absent		6	6	6	6
Palpebral closure					
Normal		6	6	6	6
Mucosal membranes					
Normal		6	6	6	6
Lacrimation					
Normal		6	6	6	6
Piloerection					
Absent		6	6	6	6
Pupil size					
Normal		6	6	6	6
Salivation					
None		6	6	6	6
Abnormal respiration					
Absent		6	6	6	6
Reactivity to handling					
Easy		6	6	6	6

Table 2-12 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

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

	Sex	Male		Female	
	Dose (mg/kg)	0	100	0	100
Parameter	No. of animals	6	6	6	6
Ease of removal from cage					
Easy		6	6	6	6
Fur condition					
Normal		6	6	6	6
Skin					
Normal		6	6	6	6
Secretions-Eye, Nose					
Absent		6	6	6	6
Exophthalmos					
Absent		6	6	6	6
Palpebral closure					
Normal		6	6	6	6
Mucosal membranes					
Normal		6	6	6	6
Lacrimation					
Normal		6	6	6	6
Piloerection					
Absent		6	6	6	6
Pupil size					
Normal		6	6	6	6
Salivation					
None		6	6	6	6
Abnormal respiration					
Absent		6	6	6	6
Reactivity to handling					
Easy		6	6	6	6

Table 2-13 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : open field observation (Week 1 of administration period)

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Arousal									
Normal		12	6	6	12	12	6	6	12
Convulsion									
None		12	6	6	12	12	6	6	12
Abnormal behavior									
None		12	6	6	12	12	6	6	12
Stereotypy									
None		12	6	6	12	12	6	6	12
Gait									
Normal		12	6	6	12	12	6	6	12
Posture									
Normal		12	6	6	12	12	6	6	12
Grooming									
None		12	6	6	12	12	6	6	12
Rearing count (Mean±S.D.)		4± 2	5± 3	4± 3	4± 2	5± 2	6± 3	6± 3	4± 2
Defecation count (Mean±S.D.)		1± 1	1± 1	1± 1	0± 1	0± 0	0± 0	0± 0	0± 0
Urination									
None		9	5	4	8	12	6	6	12
Small amount		2	1	1	2	0	0	0	0
Moderate amount		1	0	1	2	0	0	0	0

No significant difference in any treated groups from control group.

Table 2-14 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : open field observation (Week 2 of administration period)

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Arousal									
Normal		12	6	6	12	12	6	6	12
Convulsion									
None		12	6	6	12	12	6	6	12
Abnormal behavior									
None		12	6	6	12	12	6	6	12
Stereotypy									
None		12	6	6	12	12	6	6	12
Gait									
Normal		12	6	6	12	12	6	6	12
Posture									
Normal		12	6	6	12	12	6	6	12
Grooming									
None		12	6	6	12	12	6	6	12
Rearing count (Mean±S.D.)		4± 2	5± 3	5± 4	3± 3	9± 2	7± 1	8± 2	6± 3**D
Defecation count (Mean±S.D.)		0± 1	0± 0	0± 1	0± 0	0± 0	0± 0	0± 0	0± 0
Urination									
None		10	6	5	11	12	6	6	12
Small amount		2	0	1	0	0	0	0	0
Moderate amount		0	0	0	1	0	0	0	0

** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test

Table 2-15 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : open field observation (Week 3 of administration period)

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Arousal									
Normal		12	6	6	12	12	6	6	12
Convulsion									
None		12	6	6	12	12	6	6	12
Abnormal behavior									
None		12	6	6	12	12	6	6	12
Stereotypy									
None		12	6	6	12	12	6	6	12
Gait									
No/minimal location		0	0	0	1	0	0	0	0
Normal		12	6	6	11	12	6	6	12
Posture									
Normal		12	6	6	12	12	6	6	12
Grooming									
None		12	6	6	12	12	6	6	12
Rearing count (Mean±S.D.)		5± 3	4± 2	4± 1	4± 3	9± 2	10± 3	10± 3	6± 3*D
Defecation count (Mean±S.D.)		0± 1	0± 0	0± 0	0± 0	0± 0	0± 0	0± 0	0± 0
Urination									
None		11	5	6	10	12	6	6	11
Small amount		0	1	0	1	0	0	0	1
Moderate amount		1	0	0	1	0	0	0	0

* : $p<0.05$ (Significant difference from control group)
D : Dunnett's test

Table 2-16 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : open field observation (Week 4 of administration period)

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Arousal									
Normal		12	6	6	12	12	6	6	12
Convulsion									
None		12	6	6	12	12	6	6	12
Abnormal behavior									
None		12	6	6	12	12	6	6	12
Stereotypy									
None		12	6	6	12	12	6	6	12
Gait									
No/minimal location		0	0	1	0	0	0	0	0
Normal		12	6	5	12	12	6	6	12
Posture									
Normal		12	6	6	12	12	6	6	12
Grooming									
None		12	6	6	12	12	6	6	12
Rearing count (Mean±S.D.)		4± 3	5± 2	3± 3	3± 3	8± 2	9± 1	8± 2	6± 2**D
Defecation count (Mean±S.D.)		0± 0	0± 0	0± 0	0± 0	0± 0	0± 0	0± 0	0± 0
Urination									
None		10	5	6	10	12	5	4	12
Small amount		2	1	0	1	0	1	2	0
Moderate amount		0	0	0	1	0	0	0	0

** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test

Table 2-17 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : open field observation (Week 1 of recovery period)

	Sex	Male		Female	
	Dose (mg/kg)	0	100	0	100
Parameter	No. of animals	6	6	6	6
Arousal					
Normal		6	6	6	6
Convulsion					
None		6	6	6	6
Abnormal behavior					
None		6	6	6	6
Stereotypy					
None		6	6	6	6
Gait					
Normal		6	6	6	6
Posture					
Normal		6	6	6	6
Grooming					
None		6	6	6	6
Rearing count (Mean±S.D.)		6± 2	4± 2*T	9± 2	6± 2
Defecation count (Mean±S.D.)		0± 0	0± 0	0± 0	0± 0
Urination					
None		5	6	6	6
Small amount		1	0	0	0

* : $p<0.05$ (Significant difference from control group)
T : Student's t-test

Table 2-18 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Detailed clinical signs : open field observation (Week 2 of recovery period)

	Sex	Male		Female	
	Dose (mg/kg)	0	100	0	100
Parameter	No. of animals	6	6	6	6
Arousal					
Normal		6	6	6	6
Convulsion					
None		6	6	6	6
Abnormal behavior					
None		6	6	6	6
Stereotypy					
None		6	6	6	6
Gait					
Normal		6	6	6	6
Posture					
Normal		6	6	6	6
Grooming					
None		6	6	6	6
Rearing count (Mean±S.D.)		6± 2	5± 2	9± 3	8± 1
Defecation count (Mean±S.D.)		0± 0	0± 0	0± 0	0± 0
Urination					
None		5	6	6	6
Small amount		1	0	0	0

No significant difference in any treated groups from control group.

Table 2-19 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Manipulative test (Week 4 of administration period)

	Sex	Male				Female			
	Dose (mg/kg)	0	4	20	100	0	4	20	100
Parameter	No. of animals	12	6	6	12	12	6	6	12
Auditory response									
Weak		0	0	0	3	0	0	0	0
Normal		12	6	6	9	12	6	6	12
Approach response									
Normal		12	6	6	12	12	6	6	12
Touch response									
Normal		12	6	6	12	12	6	6	12
Tail pinch response									
Weak		0	0	0	0	0	0	0	1
Normal		12	6	6	12	12	6	6	11
Pupillary reflex									
Pass, both		12	6	6	12	12	6	6	12
Aerial righting reflex (Total score: Mean±S.D.)		0± 0	0± 0	0± 0	0± 0	0± 0	0± 0	0± 0	0± 1
Landing foot splay (mm: Mean±S.D.)		75±20	67±13	69± 5	69±17	60±14	50±15	51±11	56±21

No significant difference in any treated groups from control group.

Table 2-20 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Manipulative test (Week 2 of recovery period)

	Sex	Male		Female	
	Dose (mg/kg)	0	100	0	100
Parameter	No. of animals	6	6	6	6
Auditory response Normal		6	6	6	6
Approach response Normal		6	6	6	6
Touch response Normal		6	6	6	6
Tail pinch response Normal		6	6	6	6
Pupillary reflex Pass, both		6	6	6	6
Aerial righting reflex (Total score: Mean±S.D.)		0± 0	0± 0	0± 0	0± 0
Landing foot splay (mm: Mean±S.D.)		92±20	79±19	65±15	65±17

No significant difference in any treated groups from control group.

Table 2-21 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Grip strength (Week 4 of administration period)

Sex	Dose mg/kg		Fore limb g	Hind limb g
Male	0	No.	12	12
		Mean	1134	583
		S.D.	151	128
	4	No.	6	6
		Mean	984	500
		S.D.	218	96
	20	No.	6	6
		Mean	1004	584
		S.D.	150	162
	100	No.	12	12
		Mean	1056	570
		S.D.	220	162
Female	0	No.	12	12
		Mean	1001	499
		S.D.	115	68
	4	No.	6	6
		Mean	940	484
		S.D.	87	127
	20	No.	6	6
		Mean	966	422
		S.D.	74	62
	100	No.	12	12
		Mean	825*	409
		S.D.	193D	99

* : $p<0.05$ (Significant difference from control group)
D : Dunnett's test

Table 2-22 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Grip strength (Week 2 of recovery period)

Sex	Dose mg/kg		Fore limb g	Hind limb g
Male	0	No.	6	6
		Mean	1628	1010
		S.D.	95	43
	100	No.	6	6
		Mean	1232*	633**
		S.D.	271AT	113AT
Female	0	No.	6	6
		Mean	1152	783
		S.D.	86	92
	100	No.	6	6
		Mean	1006*	582**
		S.D.	87T	99T

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
T : Student's t-test
AT : Aspin-Welch t-test

Table 2-23 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Motor activity (Week 4 of administration period)

Sex	Dose mg/kg		Interval (minutes) 0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
Male	0	No.	12	12	12	12	12	12	12
		Mean	400	338	309	260	233	139	1679
		S.D.	32	36	38	72	128	134	274
	4	No.	6	6	6	6	6	6	6
		Mean	413	336	253	246	239	242	1728
		S.D.	41	64	96	125	125	145	388
	20	No.	6	6	6	6	6	6	6
		Mean	416	335	302	257	205	165	1680
		S.D.	33	47	63	81	95	163	366
	100	No.	12	12	12	12	12	12	12
		Mean	257**	251**	228**	182	186	136	1239**
		S.D.	58D	58D	64D	61	92	109	289D
Female	0	No.	12	12	12	12	12	12	12
		Mean	374	314	244	210	221	237	1600
		S.D.	33	47	104	104	104	100	359
	4	No.	6	6	6	6	6	6	6
		Mean	416	360	290	226	227	242	1760
		S.D.	40	54	65	145	117	80	325
	20	No.	6	6	6	6	6	6	6
		Mean	413	358	369*	305	285	258	1988
		S.D.	45	41	12DT	31	43	75	71
	100	No.	12	12	12	12	12	12	12
		Mean	277**	224**	196	217	143	152	1209
		S.D.	63D	95D	92	103	118	156	548

Unit : Count
* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test
DT : Dunnett-type rank test

Table 2-24 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Motor activity (Week 2 of recovery period)

Sex	Dose mg/kg		Interval (minutes) 0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
Male	0	No.	6	6	6	6	6	6	6
		Mean	336	323	259	189	211	220	1537
		S.D.	42	69	73	79	84	78	279
	100	No.	6	6	6	6	6	6	6
		Mean	360	305	276	268	284	261	1753
		S.D.	49	57	49	73	60	43	246
Female	0	No.	6	6	6	6	6	6	6
		Mean	322	268	215	171	189	217	1381
		S.D.	57	51	93	89	57	71	275
	100	No.	6	6	6	6	6	6	6
		Mean	358	296	275	267	260*	250	1705
		S.D.	33	63	78	71	44T	104	309

Unit : Count
* : $p<0.05$ (Significant difference from control group)
T : Student's t-test

Table 3-1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Body weight (Administration period)

Sex	Dose mg/kg		Day of administration 1	4	7	10	14	17	21	24	28	Gain 1-28
Male	0	No.	12	12	12	12	12	12	12	12	12	12
		Mean	220	245	275	302	337	358	386	400	422	202
		S.D.	8	11	16	22	28	33	40	44	48	42
	4	No.	6	6	6	6	6	6	6	6	6	6
		Mean	221	249	281	308	345	369	398	415	439	218
		S.D.	6	9	10	13	15	18	24	27	28	25
	20	No.	6	6	6	6	6	6	6	6	6	6
		Mean	219	240	268	295	328	351	373	385	403	184
		S.D.	7	6	8	10	12	13	16	21	25	25
	100	No.	12	12	12	12	12	12	12	12	12	12
		Mean	219	228**	241**	258**	275**	287**	297**	300**	310**	92**
		S.D.	7	13D	22D	30D	41D	49D	56D	56D	47D	46D
Female	0	No.	12	12	12	12	12	12	12	12	12	12
		Mean	157	165	175	186	198	207	217	228	234	77
		S.D.	7	7	9	11	11	15	16	15	18	13
	4	No.	6	6	6	6	6	6	6	6	6	6
		Mean	157	167	178	191	204	213	221	235	238	81
		S.D.	6	8	11	9	11	9	10	11	12	9
	20	No.	6	6	6	6	6	6	6	6	6	6
		Mean	158	167	178	188	200	211	221	230	239	81
		S.D.	7	11	12	14	17	17	21	24	24	19
	100	No.	12	12	12	12	12	12	12	12	12	12
		Mean	157	163	168	173*	181**	186**	190**	188**	186**	29**
		S.D.	8	5	6	8D	12D	14D	18D	21D	21D	23D

Unit : g
* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test

Table 3-2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Body weight (Recovery period)

Sex	Dose mg/kg		Day of recovery 1	3	7	10	14	Gain 1-14
Male	0	No.	6	6	6	6	6	6
		Mean	445	456	476	494	511	65
		S.D.	30	30	33	33	37	9
	100	No.	6	6	6	6	6	6
		Mean	299**	309**	328**	345**	366**	68
		S.D.	42T	29T	19T	20T	21T	42
Female	0	No.	6	6	6	6	6	6
		Mean	239	247	255	263	266	27
		S.D.	16	22	23	20	24	11
	100	No.	6	6	6	6	6	6
		Mean	195**	197**	209**	220**	227**	32
		S.D.	8T	8AT	5AT	7AT	6AT	12

Unit : g
** : $p<0.01$ (Significant difference from control group)
T : Student's t-test
AT : Aspin-Welch t-test

Table 4-1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Food consumption (Administration period)

Sex	Dose mg/kg		Day of administration 1	7	14	21	28
Male	0	No.	12	12	12	12	12
		Mean	25	27	29	29	29
		S.D.	1	2	3	3	3
	4	No.	6	6	6	6	6
		Mean	26	28	30	30	30
		S.D.	2	2	3	2	3
	20	No.	6	6	6	6	6
		Mean	25	26	29	29	28
		S.D.	2	1	1	3	3
	100	No.	12	12	12	12	12
		Mean	25	21**	22**	21**	20**
		S.D.	2	4DT	6D	7D	4D
Female	0	No.	12	12	12	12	12
		Mean	17	17	18	18	19
		S.D.	3	1	2	2	2
	4	No.	6	6	6	6	6
		Mean	17	18	19	19	20
		S.D.	2	2	1	1	1
	20	No.	6	6	6	6	6
		Mean	17	18	19	19	19
		S.D.	1	1	2	2	2
	100	No.	12	12	12	12	12
		Mean	17	16**	16*	15**	12**
		S.D.	2	2D	3D	3D	4D

Unit : g/rat/day
* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test
DT : Dunnett-type rank test

Table 4-2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Food consumption (Recovery period)

Sex	Dose mg/kg		Day of recovery 7	14
Male	0	No.	6	6
		Mean	30	30
		S.D.	2	3
	100	No.	6	6
		Mean	23*	26
		S.D.	5T	4
Female	0	No.	6	6
		Mean	20	19
		S.D.	3	2
	100	No.	6	6
		Mean	14**	18
		S.D.	2T	2

Unit : g/rat/day
* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
T : Student's t-test

Table 5-1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Urinalysis (Week 4 of administration period)

Sex	Dose mg/kg	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	-	+-	+	++	+++	++++	-	+-	+	++	+++	++++	-	+-	+	++	+++	++++
Male	0	12	0	0	0	0	0	0	0	10	2	2	6	4	0	0	0	5	3	4	0	0	0	12	0	0	0	0	0
	4	6	0	0	0	0	0	0	0	6	0	0	2	4	0	0	0	2	1	3	0	0	0	6	0	0	0	0	0
	20	6	0	0	0	0	0	0	0	4	2	0	3	3	0	0	0	3	1	2	0	0	0	6	0	0	0	0	0
	100	12	0	0	0	0	0	2	4	6	0	0	8	4	0	0	0	10	2	0	0	0	0	12	0	0	0	0	0
Female	0	12	0	0	0	0	0	0	1	7	4	8	4	0	0	0	0	7	5	0	0	0	0	12	0	0	0	0	0
	4	6	0	0	0	0	1	0	0	3	2	2	3	1	0	0	0	4	1	1	0	0	0	6	0	0	0	0	0
	20	6	0	0	0	0	0	2	0	3	1	5	0	1	0	0	0	6	0	0	0	0	0	6	0	0	0	0	0
	100	12	0	0	0	1	3	1	4	3	0	10	2	0	0	0	0	11	1	0	0	0	0	12	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 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Urinalysis (Week 4 of administration period)

Sex	Dose mg/kg	No.	4) Occult blood					5) Bilirubin					6) Urobilinogen					7) Color		
			-	+-	+	++	+++	-	+	++	+++	++++	+-	+	++	+++	++++	LY	Y	DY
Male	0	12	11	1	0	0	0	12	0	0	0	0	10	1	1	0	0	0	12	0
	4	6	6	0	0	0	0	6	0	0	0	0	6	0	0	0	0	0	6	0
	20	6	6	0	0	0	0	6	0	0	0	0	5	1	0	0	0	0	6	0
	100	12	12	0	0	0	0	12	0	0	0	0	12	0	0	0	0	0	12	0
Female	0	12	12	0	0	0	0	12	0	0	0	0	12	0	0	0	0	0	12	0
	4	6	6	0	0	0	0	6	0	0	0	0	6	0	0	0	0	0	6	0
	20	6	5	0	0	0	1	6	0	0	0	0	6	0	0	0	0	0	6	0
	100	12	12	0	0	0	0	12	0	0	0	0	12	0	0	0	0	0	12	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 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Urinalysis (Week 4 of administration period)

Sex	Dose mg/kg	No.	URINE SEDIMENT																																	
			RBC					WBC					SEC					SREC					Cast			CRYSTALLIZATION PS						CRYSTALLIZATION CO				
			-	+-	+	++	+++	-	+-	+	++	+++	-	+-	+	++	+++	-	+-	+	++	+++	-	+-	+	-	+-	+	++	+++	-	+-	+	++	+++
Male	0	12	12	0	0	0	0	12	0	0	0	0	0	12	0	0	0	12	0	0	0	0	12	0	0	12	0	0	0	0	12	0	0	0	0
	4	6	6	0	0	0	0	6	0	0	0	0	0	6	0	0	0	6	0	0	0	0	6	0	0	6	0	0	0	0	6	0	0	0	0
	20	6	6	0	0	0	0	6	0	0	0	0	0	6	0	0	0	5	1	0	0	0	6	0	0	6	0	0	0	0	5	1	0	0	0
	100	12	12	0	0	0	0	12	0	0	0	0	0	12	0	0	0	8	4	0	0	0	12	0	0	10	2	0	0	0	12	0	0	0	0
Female	0	12	12	0	0	0	0	12	0	0	0	0	0	12	0	0	0	11	1	0	0	0	12	0	0	12	0	0	0	0	10	2	0	0	0
	4	6	6	0	0	0	0	6	0	0	0	0	0	6	0	0	0	6	0	0	0	0	6	0	0	5	1	0	0	0	4	2	0	0	0
	20	6	5	0	0	1	0	5	1	0	0	0	0	6	0	0	0	6	0	0	0	0	6	0	0	4	2	0	0	0	6	0	0	0	0
	100	12	12	0	0	0	0	12	0	0	0	0	0	12	0	0	0	10	2	0	0	0	12	0	0	9	3	0	0	0	8	4	0	0	0

SEC : Squamous Epithelial Cell
SREC : Small Round Epithelial Cell
PS : Phosphate Salts
CO : Calcium Oxalate

\- : Negative
+- : Slight
\+ : Mild
++ : Moderate
+++ : Severe

Table 5-4 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Water intake and urinalysis (Week 4 of administration period)

Sex	Dose mg/kg	No.		Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
	0	12	Mean	35	14.6	1883
			S.D.	10	7.6	483
Male	4	6	Mean	35	11.1	2068
			S.D.	4	1.6	216
	20	6	Mean	36	11.0	1837
			S.D.	6	5.1	350
	100	12	Mean	62**	26.9**	592**
			S.D.	11D	9.9DT	270D
	0	12	Mean	26	8.2	1956
			S.D.	4	3.2	399
Female	4	6	Mean	32	5.3	1941
			S.D.	5	2.2	304
	20	6	Mean	29	8.1	1721
			S.D.	5	4.0	354
	100	12	Mean	56**	24.3**	560**
			S.D.	28DT	11.1DT	375D

** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test
DT : Dunnett-type rank test

Table 5-5 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Urinalysis (Week 2 of recovery period)

Sex	Dose mg/kg	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	-	+-	+	++	+++	++++	-	+-	+	++	+++	++++	-	+-	+	++	+++	++++
Male	0	6	0	0	0	0	0	0	0	5	1	2	2	2	0	0	0	0	0	5	1	0	0	6	0	0	0	0	0
	100	6	0	0	0	0	0	0	1	4	1	3	2	1	0	0	0	5	0	1	0	0	0	6	0	0	0	0	0
Female	0	6	1	0	0	1	0	1	0	3	0	4	2	0	0	0	0	2	2	2	0	0	0	6	0	0	0	0	0
	100	6	2	0	0	0	0	0	2	2	0	6	0	0	0	0	0	6	0	0	0	0	0	6	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 5-6 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Urinalysis (Week 2 of recovery period)

Sex	Dose mg/kg	No.	4) Occult blood					5) Bilirubin					6) Urobilinogen					7) Color		
			-	+-	+	++	+++	-	+	++	+++	++++	+-	+	++	+++	++++	LY	Y	DY
Male	0	6	5	1	0	0	0	6	0	0	0	0	5	0	1	0	0	0	6	0
	100	6	6	0	0	0	0	6	0	0	0	0	6	0	0	0	0	0	6	0
Female	0	6	5	0	0	1	0	6	0	0	0	0	5	1	0	0	0	0	6	0
	100	6	5	0	0	1	0	5	1	0	0	0	6	0	0	0	0	0	6	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 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Urinalysis (Week 2 of recovery period)

Sex	Dose mg/kg	No.	URINE SEDIMENT																															
			RBC					WBC					SEC					SREC					Cast			CRYSTALLIZATION PS					CRYSTALLIZATION CO				
			-	+-	+	++	+++	-	+-	+	++	+++	-	+-	+	++	+++	-	+-	+	++	+++	-	+-	+	-	+-	+	++	+++	-	+-	+	++	+++
Male	0	6	6	0	0	0	0	6	0	0	0	0	0	6	0	0	0	6	0	0	0	0	6	0	0	5	1	0	0	0	6	0	0	0	0
	100	6	6	0	0	0	0	6	0	0	0	0	0	6	0	0	0	4	2	0	0	0	6	0	0	6	0	0	0	0	6	0	0	0	0
Female	0	6	5	1	0	0	0	6	0	0	0	0	0	6	0	0	0	6	0	0	0	0	6	0	0	5	1	0	0	0	6	0	0	0	0
	100	6	6	0	0	0	0	6	0	0	0	0	0	6	0	0	0	4	2	0	0	0	6	0	0	6	0	0	0	0	6	0	0	0	0

SEC : Squamous Epithelial Cell
SREC : Small Round Epithelial Cell
PS : Phosphate Salts
CO : Calcium Oxalate

\- : Negative
+- : Slight
\+ : Mild
++ : Moderate
+++ : Severe

Table 5-8 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Water intake and urinalysis (Week 2 of recovery period)

Sex	Dose mg/kg	No.		Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
Male	0	6	Mean	37	12.8	2016
			S.D.	8	4.4	518
	100	6	Mean	46	21.8	1116**
			S.D.	18	14.4	369T
Female	0	6	Mean	29	7.9	2111
			S.D.	3	3.8	541
	100	6	Mean	61	26.8**	801**
			S.D.	35	8.0T	187AT

** : p<0.01 (Significant difference from control group)
T : Student's t-test
AT : Aspin-Welch t-test

Table 6-1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Hematology (After administration period)

Sex	Dose mg/kg	No.		RBC X10⁴/μL	HGB g/dL	HCT %	MCV fL	MCH pg	MCHC g/dL	Reticul. %	PLT X10⁴/μL	PT s	APTT s	FIB mg/dL
Male	0	6	Mean	819	16.0	45.2	55.2	19.6	35.4	2.3	122.9	15.7	24.9	305
			S.D.	30	0.5	2.1	2.5	0.8	0.6	0.6	24.1	3.0	3.8	19
	4	6	Mean	784*	15.5	43.4	55.3	19.7	35.6	2.4	124.7	13.8	22.9	299
			S.D.	14D	0.4	1.1	0.7	0.4	0.4	0.5	3.2	1.2	3.0	26
	20	6	Mean	804	15.9	45.3	56.5	19.7	35.0	2.5	133.2	16.7	26.4	311
			S.D.	19	0.4	0.6	1.3	0.5	0.5	0.2	9.9	2.2	7.2	30
	100	6	Mean	848	16.5	45.7	53.9	19.4	36.0	1.5*	157.2**	15.4	25.4	322
			S.D.	19	0.4	1.3	0.9	0.3	0.6	0.4D	13.6DT	2.2	4.6	6
Female	0	6	Mean	796	15.2	42.0	52.8	19.1	36.1	2.0	150.4	12.0	18.1	227
			S.D.	34	0.7	2.1	2.4	0.9	0.4	0.4	8.3	0.2	2.7	28
	4	6	Mean	771	15.1	41.6	54.0	19.5	36.2	2.0	143.6	11.8	19.5	237
			S.D.	26	0.3	0.9	1.0	0.4	0.3	0.5	10.5	0.5	3.3	33
	20	6	Mean	745*	14.8	41.2	55.4	19.9	35.9	2.8	140.3	11.6	18.2	229
			S.D.	29D	0.2	0.6	1.8	0.8	0.6	0.8	4.5	0.4	2.0	34
	100	6	Mean	836	16.2*	43.2	51.8	19.4	37.4**	1.2*	175.0**	12.1	24.2**	228
			S.D.	45	0.8D	2.0	1.9	0.5	0.8D	0.4D	15.5D	0.6	2.9D	14

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test
DT : Dunnett-type rank test

Table 6-2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Hematology (After administration period)

Sex	Dose mg/kg	No.		WBC	Differential leukocyte counts (%)					
				$\times 10^3/\mu L$	LYMP	NEUT	EOS	BASO	MONO	LUC
Male	0	6	Mean	106.5	78.0	18.1	0.9	0.4	2.1	0.7
			S.D.	45.1	4.3	4.7	0.2	0.1	1.2	0.1
	4	6	Mean	114.9	78.3	17.6	1.0	0.4	2.3	0.5
			S.D.	44.1	6.8	6.4	0.4	0.1	0.6	0.1
	20	6	Mean	129.4	79.2	16.4	1.1	0.4	2.2	0.8
			S.D.	43.0	1.8	1.7	0.1	0.1	0.6	0.4
	100	6	Mean	96.6	82.5	13.6	0.9	0.3	2.0	0.6
			S.D.	14.5	3.5	3.9	0.2	0.1	0.5	0.2
Female	0	6	Mean	69.1	81.9	14.5	1.1	0.3	1.5	0.8
			S.D.	17.8	5.3	4.8	0.4	0.1	0.6	0.2
	4	6	Mean	74.1	74.1*	21.4	1.5	0.2	2.1	0.7
			S.D.	24.7	5.8D	5.5	0.7	0.1	0.6	0.2
	20	6	Mean	88.7	78.1	17.5	1.2	0.3	2.0	0.8
			S.D.	44.0	5.9	5.9	0.6	0.1	0.4	0.2
	100	6	Mean	65.3	80.5	16.3	0.5	0.3	1.8	0.6
			S.D.	22.6	4.1	4.4	0.2	0.1	0.8	0.3

LUC : Large unstained cells
* : $p<0.05$ (Significant difference from control group)
D : Dunnett's test

Table 6-3 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Hematology (After administration period)

Sex	Dose mg/kg	No.		Differential leukocyte counts ($X10^2/\mu L$)					
				LYMP	NEUT	EOS	BASO	MONO	LUC
Male	0	6	Mean	83.6	18.8	0.9	0.4	2.1	0.7
			S.D.	36.9	9.0	0.4	0.2	1.0	0.4
	4	6	Mean	91.9	18.6	1.1	0.5	2.4	0.6
			S.D.	42.1	5.3	0.3	0.3	0.3	0.2
	20	6	Mean	102.9	21.0	1.4	0.5	2.7	1.0
			S.D.	35.4	6.3	0.4	0.2	0.8	0.6
	100	6	Mean	79.9	12.9	0.9	0.4	1.9	0.6
			S.D.	13.8	3.5	0.2	0.1	0.5	0.2
Female	0	6	Mean	56.2	10.3	0.7	0.2	1.1	0.6
			S.D.	12.7	5.6	0.5	0.1	0.5	0.3
	4	6	Mean	55.8	15.1	1.0	0.2	1.5	0.6
			S.D.	21.9	4.3	0.3	0.1	0.4	0.3
	20	6	Mean	70.2	14.8	0.9	0.3	1.7	0.8
			S.D.	38.4	6.0	0.2	0.3	0.6	0.5
	100	6	Mean	53.1	10.0	0.3	0.3	1.2	0.5
			S.D.	20.2	1.8	0.2	0.1	0.8	0.4

LUC : Large unstained cells
No significant difference in any treated groups from control group.

Table 6-4 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Hematology (After recovery period)

Sex	Dose mg/kg	No.		RBC X10⁴/μL	HGB g/dL	HCT %	MCV fL	MCH pg	MCHC g/dL	Reticul. %	PLT X10⁴/μL	PT s	APTT s	FIB mg/dL
Male	0	6	Mean	851	15.6	44.2	51.9	18.3	35.3	2.3	111.3	14.7	21.2	304
			S.D.	33	0.4	1.6	1.7	0.4	0.5	0.4	11.0	1.6	2.6	14
	100	6	Mean	853	15.2	43.2	50.8	17.9	35.3	3.3*	125.3*	14.5	23.2	275*
			S.D.	44	0.2	0.6	2.9	0.8	0.6	0.7T	8.3T	1.0	3.7	19T
Female	0	6	Mean	818	15.2	42.2	51.7	18.6	36.0	1.8	125.9	12.0	17.5	218
			S.D.	24	0.2	0.5	1.1	0.4	0.4	0.6	13.6	0.5	3.2	11
	100	6	Mean	806	14.9	41.6	51.6	18.5	35.9	2.6*	138.2	11.7	19.1	226
			S.D.	28	0.6	2.0	1.4	0.4	0.6	0.5T	20.2	0.5	2.9	16

* : $p<0.05$ (Significant difference from control group)
T : Student's t-test

Table 6-5 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Hematology (After recovery period)

Sex	Dose mg/kg	No.		WBC	Differential leukocyte counts (%)					
				X10³/μL	LYMP	NEUT	EOS	BASO	MONO	LUC
Male	0	6	Mean	120.4	82.4	13.8	1.1	0.4	1.7	0.7
			S.D.	27.3	4.2	3.6	0.4	0.0	0.4	0.2
	100	6	Mean	103.7	76.5	19.3	1.1	0.4*	2.1	0.7
			S.D.	31.4	5.3	5.2	0.3	0.1T	0.5	0.2
Female	0	6	Mean	58.0	74.0	21.3	1.4	0.3	2.2	0.9
			S.D.	14.4	10.4	9.8	0.5	0.1	0.6	0.3
	100	6	Mean	73.3	74.4	21.1	1.4	0.3	1.9	0.9
			S.D.	21.0	9.1	8.1	0.7	0.1	0.6	0.1

LUC : Large unstained cells
* : $p<0.05$ (Significant difference from control group)
T : Student's t-test

Table 6-6 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Hematology (After recovery period)

Sex	Dose mg/kg	No.		Differential leukocyte counts ($X10^3/\mu L$)					
				LYMP	NEUT	EOS	BASO	MONO	LUC
Male	0	6	Mean	99.8	16.0	1.3	0.5	2.0	0.9
			S.D.	27.3	3.7	0.5	0.1	0.4	0.2
	100	6	Mean	78.7	20.6	1.1	0.4•	2.2	0.7
			S.D.	21.4	10.8	0.5	0.1T	0.8	0.3
Female	0	6	Mean	43.0	12.2	0.8	0.2	1.3	0.6
			S.D.	12.9	6.5	0.4	0.1	0.6	0.3
	100	6	Mean	54.2	15.7	1.1	0.2	1.4	0.7
			S.D.	16.9	7.6	0.7	0.1	0.5	0.2

LUC : Large unstained cells
• : $p<0.05$ (Significant difference from control group)
T : Student's t-test

Table 7-1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Blood chemistry (After administration period)

Sex	Dose mg/kg	No.		AST IU/L	ALT IU/L	LDH IU/L	γ-GTP IU/L	ALP IU/L	T-CHO mg/dL	TG mg/dL	PL mg/dL	T-BIL mg/dL	GLU mg/dL
	0	6	Mean	63	27	52	1	770	48	53	86	0.1	126
			S.D.	7	2	7	0	163	12	15	17	0.0	15
Male	4	6	Mean	60	26	49	1	644	56	94*	101	0.1	128
			S.D.	7	3	8	0	129	8	27D	12	0.0	11
	20	6	Mean	61	26	60	1	695	49	67	95	0.1	140
			S.D.	6	5	18	0	183	5	19	11	0.0	17
	100	6	Mean	56	28	67	1	558	72**	69	121**	0.1	120
			S.D.	10	7	17	1	146	17D	23	19D	0.0	8
	0	6	Mean	64	21	52	1	423	57	15	99	0.1	105
			S.D.	6	3	16	0	80	8	7	12	0.0	8
Female	4	6	Mean	68	25	54	1	407	71	16	121	0.1	103
			S.D.	7	6	8	1	75	12	7	15	0.0	8
	20	6	Mean	62	22	53	1	421	70	20	120	0.1	101
			S.D.	3	3	12	0	154	10	7	16	0.0	12
	100	6	Mean	48**	20	63	1	335	88**	24	130**	0.1	114
			S.D.	2D	3	9	1	65	11D	6	17D	0.0	17

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test

Table 7-2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Blood chemistry (After administration period)

Sex	Dose mg/kg	No.		BUN mg/dL	CRNN mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	ALB g/dL	A/G
Male	0	6	Mean	13	0.24	144	4.7	107	9.8	7.7	6.1	3.1	1.05
			S.D.	2	0.02	1	0.2	2	0.3	0.6	0.2	0.1	0.07
	4	6	Mean	12	0.25	144	4.6	106	9.7	8.1	6.0	3.1	1.05
			S.D.	1	0.03	1	0.3	1	0.3	0.5	0.1	0.1	0.06
	20	6	Mean	11	0.22	144	4.9	107	9.9	7.9	6.3	3.2	1.03
			S.D.	1	0.02	1	0.4	1	0.2	0.5	0.2	0.1	0.06
	100	6	Mean	12	0.26	143	4.8	107	10.0	7.2	6.5*	3.3*	1.05
			S.D.	2	0.03	1	0.2	2	0.3	0.7	0.2D	0.1D	0.06
Female	0	6	Mean	17	0.31	143	4.7	110	9.8	8.0	6.2	3.2	1.09
			S.D.	3	0.04	1	0.4	1	0.2	0.9	0.2	0.1	0.06
	4	6	Mean	15	0.31	142	4.7	110	9.9	6.9*	6.4	3.4	1.11
			S.D.	1	0.04	1	0.3	1	0.2	0.5D	0.2	0.2	0.15
	20	6	Mean	13*	0.28	143	4.4	110	9.8	7.5	6.1	3.2	1.11
			S.D.	2D	0.03	1	0.3	2	0.2	0.6	0.4	0.1	0.10
	100	6	Mean	14	0.24**	142	5.0	109	9.6	7.1	6.4	3.4	1.16
			S.D.	3	0.03D	1	0.6	1	0.3	0.9	0.5	0.2	0.09

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test

Table 7-3 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Blood chemistry (After recovery period)

Sex	Dose mg/kg	No.		AST IU/L	ALT IU/L	LDH IU/L	γ-GTP IU/L	ALP IU/L	T-CHO mg/dL	TG mg/dL	PL mg/dL	T-BIL mg/dL	GLU mg/dL
Male	0	6	Mean	67	29	64	1	531	65	92	110	0.1	143
			S.D.	8	6	9	0	97	19	48	21	0.0	12
	100	6	Mean	62	28	61	1	655	68	52	111	0.1	123*
			S.D.	6	2	9	1	199	10	9	12	0.0	14T
Female	0	6	Mean	59	22	49	1	231	63	23	115	0.1	122
			S.D.	4	6	9	0	49	13	14	23	0.0	12
	100	6	Mean	56	21	46	1	291	87**	25	138*	0.1	116
			S.D.	4	3	7	0	45	7T	5	11T	0.0	13

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
T : Student's t-test

Table 7-4 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Blood chemistry (After recovery period)

Sex	Dose mg/kg	No.		BUN mg/dL	CRNN mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	ALB g/dL	A/G
Male	0	6	Mean	12	0.26	144	4.5	105	9.4	7.2	6.4	3.2	0.99
			S.D.	1	0.01	1	0.2	2	0.3	0.4	0.2	0.1	0.10
	100	6	Mean	13	0.28	144	4.8	106	9.6	8.2**	6.4	3.3	1.10
			S.D.	1	0.04	1	0.4	1	0.3	0.6T	0.2	0.1	0.10
Female	0	6	Mean	16	0.32	143	4.1	109	9.9	6.7	6.7	3.6	1.17
			S.D.	2	0.04	1	0.2	1	0.4	0.6	0.3	0.2	0.10
	100	6	Mean	16	0.31	143	4.4	108	9.5	7.8**	6.3*	3.2**	1.03*
			S.D.	3	0.03	1	0.5	2	0.2	0.6T	0.2T	0.2T	0.08T

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
T : Student's t-test

Table 8-1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Absolute and relative organ weight (After administration period)

Male

	Dose mg/kg		Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R+L) g(g/100g BW)	Adrenal (R+L) mg(mg/100g BW)
Absolute	0	No.	6	6	6	6	6	6	6	6
		Mean	371	2.03	510	1.27	10.88	0.77	2.73	62
		S.D.	54	0.06	99	0.18	2.17	0.18	0.44	10
	4	No.	6	6	6	6	6	6	6	6
		Mean	406	1.97	568	1.30	12.18	0.77	2.96	69
		S.D.	26	0.07	102	0.07	1.47	0.12	0.25	10
	20	No.	6	6	6	6	6	6	6	6
		Mean	370	2.02	550	1.24	12.22	0.71	2.85	58
		S.D.	20	0.12	107	0.12	1.17	0.12	0.15	14
	100	No.	6	6	6	6	6	6	6	6
		Mean	297**	1.94	411	0.92**	11.69	0.58*	2.53	69
		S.D.	44D	0.04	140	0.17D	1.70	0.06D	0.28	8
Relative	0	No.		6	6	6	6	6	6	6
		Mean		0.56	137	0.34	2.92	0.21	0.74	17
		S.D.		0.07	18	0.02	0.22	0.03	0.07	3
	4	No.		6	6	6	6	6	6	6
		Mean		0.49	140	0.32	2.99	0.19	0.73	17
		S.D.		0.04	29	0.01	0.22	0.02	0.06	1
	20	No.		6	6	6	6	6	6	6
		Mean		0.55	148	0.33	3.30**	0.19	0.77	16
		S.D.		0.02	24	0.02	0.19D	0.03	0.01	3
	100	No.		6	6	6	6	6	6	6
		Mean		0.67	136	0.31*	3.94**	0.20	0.86**	24**
		S.D.		0.12	34	0.03D	0.17D	0.03	0.08D	3D

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test

Table 8-2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Absolute and relative organ weight (After administration period)

Male

	Dose mg/kg		Testis (R+L) g(g/100g BW)	Epididymis (R+L) mg(mg/100g BW)
Absolute	0	No.	6	6
		Mean	3.34	864
		S.D.	0.39	94
	4	No.	6	6
		Mean	3.34	872
		S.D.	0.17	63
	20	No.	6	6
		Mean	3.02	837
		S.D.	0.36	59
	100	No.	6	6
		Mean	3.11	790
		S.D.	0.23	87
Relative	0	No.	6	6
		Mean	0.91	234
		S.D.	0.10	22
	4	No.	6	6
		Mean	0.83	215
		S.D.	0.05	17
	20	No.	6	6
		Mean	0.82	226
		S.D.	0.10	18
	100	No.	6	6
		Mean	1.08	269
		S.D.	0.26	35

No significant difference in any treated groups from control group.

Table 8-3 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Absolute and relative organ weight (After administration period)

Female

	Dose mg/kg		Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R+L) g(g/100g BW)	Adrenal (R+L) mg(mg/100g BW)
Absolute	0	No.	6	6	6	6	6	6	6	6
		Mean	217	1.82	419	0.79	5.85	0.44	1.56	67
		S.D.	18	0.07	52	0.05	0.64	0.08	0.19	9
	4	No.	6	6	6	6	6	6	6	6
		Mean	226	1.92	436	0.78	6.31	0.46	1.65	68
		S.D.	10	0.06	101	0.11	0.68	0.07	0.06	14
	20	No.	6	6	6	6	6	6	6	6
		Mean	225	1.85	431	0.80	6.71	0.52	1.75	66
		S.D.	21	0.07	92	0.09	0.76	0.12	0.13	14
	100	No.	6	6	6	6	6	6	6	6
		Mean	164**	1.80	232**	0.57**	5.65	0.33	1.67	52
		S.D.	26D	0.09	122D	0.08D	0.83	0.06	0.20	13
Relative	0	No.		6	6	6	6	6	6	6
		Mean		0.85	194	0.36	2.70	0.20	0.72	32
		S.D.		0.07	17	0.01	0.08	0.02	0.05	6
	4	No.		6	6	6	6	6	6	6
		Mean		0.85	193	0.34	2.79	0.21	0.73	30
		S.D.		0.02	40	0.03	0.20	0.03	0.04	6
	20	No.		6	6	6	6	6	6	6
		Mean		0.82	191	0.36	2.98*	0.23	0.78	29
		S.D.		0.05	32	0.03	0.14D	0.03	0.02	7
	100	No.		6	6	6	6	6	6	6
		Mean		1.11*	135*	0.35	3.45**	0.20	1.04**	32
		S.D.		0.14DT	54D	0.01	0.21D	0.02	0.17DT	7

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test
DT : Dunnett-type rank test

Table 8-4 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Absolute and relative organ weight (After administration period)

Female

	Dose mg/kg		Ovary (R+L) mg(mg/100g BW)	Uterus mg(mg/100g BW)
Absolute	0	No.	6	6
		Mean	77.1	410
		S.D.	6.7	80
	4	No.	6	6
		Mean	83.4	450
		S.D.	9.9	115
	20	No.	6	6
		Mean	87.0	484
		S.D.	9.8	107
	100	No.	6	6
		Mean	55.7**	328
		S.D.	10.4D	193
Relative	0	No.	6	6
		Mean	35.8	189
		S.D.	3.4	33
	4	No.	6	6
		Mean	36.9	199
		S.D.	3.6	48
	20	No.	6	6
		Mean	38.9	215
		S.D.	5.5	41
	100	No.	6	6
		Mean	34.0	193
		S.D.	5.0	103

** : $p<0.01$ (Significant difference from control group)
D : Dunnett's test

Table 8-5 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Absolute and relative organ weight (After recovery period)

Male

	Dose mg/kg		Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R+L) g(g/100g BW)	Adrenal (R+L) mg(mg/100g BW)
Absolute	0	No.	6	6	6	6	6	6	6	6
		Mean	480	2.08	633	1.41	13.69	0.79	3.14	75
		S.D.	33	0.05	88	0.08	1.36	0.08	0.41	12
	100	No.	6	6	6	6	6	6	6	6
		Mean	334**	2.00	360**	1.06**	10.05**	0.66	2.58*	57*
		S.D.	22T	0.10	84T	0.06T	1.13T	0.14	0.30T	6T
Relative	0	No.		6	6	6	6	6	6	6
		Mean		0.44	132	0.29	2.85	0.17	0.65	16
		S.D.		0.03	19	0.02	0.22	0.01	0.06	2
	100	No.		6	6	6	6	6	6	6
		Mean		0.60**	108	0.32*	3.01	0.20	0.77*	17
		S.D.		0.05T	22	0.01T	0.21	0.04	0.08T	2

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
T : Student's t-test

Table 8-6 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Absolute and relative organ weight (After recovery period)

Male

	Dose mg/kg		Testis (R+L) g(g/100g BW)	Epididymis (R+L) mg(mg/100g BW)
Absolute	0	No.	6	6
		Mean	3.51	1146
		S.D.	0.14	53
	100	No.	6	6
		Mean	3.24*	1031*
		S.D.	0.18T	89T
Relative	0	No.	6	6
		Mean	0.73	240
		S.D.	0.07	23
	100	No.	6	6
		Mean	0.97**	310**
		S.D.	0.09T	33T

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
T : Student's t-test

Table 8-7 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Absolute and relative organ weight (After recovery period)

Female

	Dose mg/kg		Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R+L) g(g/100g BW)	Adrenal (R+L) mg(mg/100g BW)
Absolute	0	No.	6	6	6	6	6	6	6	6
		Mean	250	1.93	315	0.83	6.68	0.45	1.68	66
		S.D.	24	0.10	62	0.05	0.69	0.07	0.15	10
	100	No.	6	6	6	6	6	6	6	6
		Mean	210**	1.84	329	0.73**	6.29	0.45	1.78	67
		S.D.	5AT	0.05	45	0.02AT	0.33	0.06	0.16	8
Relative	0	No.		6	6	6	6	6	6	6
		Mean		0.78	126	0.33	2.68	0.18	0.67	27
		S.D.		0.05	23	0.03	0.12	0.02	0.03	4
	100	No.		6	6	6	6	6	6	6
		Mean		0.88**	157*	0.35	3.00**	0.22*	0.85**	32*
		S.D.		0.04T	19T	0.01	0.11T	0.03T	0.07AT	4T

* : $p<0.05$; ** : $p<0.01$ (Significant difference from control group)
T : Student's t-test
AT : Aspin-Welch t-test

Table 8-8 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Absolute and relative organ weight (After recovery period)

Female

	Dose mg/kg		Ovary (R+L) mg(mg/100g BW)	Uterus mg(mg/100g BW)
Absolute	0	No.	6	6
		Mean	89.8	438
		S.D.	15.8	100
	100	No.	6	6
		Mean	78.3	398
		S.D.	10.1	89
Relative	0	No.	6	6
		Mean	36.0	174
		S.D.	5.3	25
	100	No.	6	6
		Mean	37.4	191
		S.D.	5.1	46

No significant difference between treated group and control group.

Table 9-1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Gross pathological findings (After administration period)

Organs / Findings	Sex:	M	M	M	M	F	F	F	F
	Dose(mg/kg):	0	4	20	100	0	4	20	100
	Number:	6	6	6	6	6	6	6	6
General descriptions									
Unkempt fur		0	0	0	0	0	0	0	2
Undernourishment		0	0	0	0	0	0	0	1
Uterus									
Small		-	-	-	-	0	0	0	2

M : Male, F : Female
- : Not applicable

Table 9-2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Gross pathological findings (After recovery period)

Organs / Findings	Sex:	M	M	F	F
	Dose(mg/kg):	0	100	0	100
	Number:	6	6	6	6
Kidney					
Dilatation,pelvic		0	0	0	1
Thyroid					
Small		0	0	0	1

M : Male, F : Female

Table 10-1 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Histopathological findings (After administration period)

Organs / Findings	Sex:	M	M	M	M	F	F	F	F
	Dose(mg/kg):	0	4	20	100	0	4	20	100
	Number:	6	6	6	6	6	6	6	6
Adrenal									
Number examined		6	6	6	6	6	6	6	6
Not remarkable		6	6	6	3	6	6	5	4
Hypertrophy,glomerular,diffuse		0	0	0	3	0	0	1	2
minimal		0	0	0	3	0	0	1	2
Bone+Bone marrow,femoral									
Number examined		6	6	6	6	6	6	6	6
Not remarkable		6	6	6	5	6	6	6	4
Hypocellularity,bone marrow		0	0	0	1	0	0	0	2
minimal		0	0	0	1	0	0	0	1
mild		0	0	0	0	0	0	0	1
Bone+Bone marrow,sternal									
Number examined		6	6	6	6	6	6	6	6
Not remarkable		6	6	6	5	6	6	6	4
Hypocellularity,bone marrow		0	0	0	1	0	0	0	2
minimal		0	0	0	1	0	0	0	2
Cerebellum									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Cerebrum									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Epididymis									
Number examined		6	0	0	6	-	-	-	-
Not remarkable		6	0	0	6	-	-	-	-
Eye									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Heart									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Intestine,duodenum									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Intestine,jejunum									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Intestine,ileum(Peyer's patch)									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Intestine,cecum									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Intestine,colon									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Intestine,rectum									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6

M : Male, F : Female
- : Not applicable

Table 10-2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Histopathological findings (After administration period)

Organs / Findings	Sex:	M	M	M	M	F	F	F	F
	Dose(mg/kg):	0	4	20	100	0	4	20	100
	Number:	6	6	6	6	6	6	6	6
Kidney									
Number examined		6	6	6	6	6	6	6	6
Not remarkable		3	3	2	0	5	5	4	0
Dilatation,tubular		0	0	0	0	0	0	0	1
minimal		0	0	0	0	0	0	0	1
Regeneration,tubular		3	1	3	1	1	0	1	2
minimal		3	1	3	1	1	0	1	2
Basophilic change,tubular		0	0	0	6	0	0	0	6
minimal		0	0	0	1	0	0	0	0
mild		0	0	0	3	0	0	0	1
moderate		0	0	0	2	0	0	0	5
Mineralization,corticomedullary		0	1	1	0	0	0	0	0
minimal		0	1	1	0	0	0	0	0
Cell infiltration,interstitial		0	1	2	1	0	0	1	1
minimal		0	1	2	1	0	0	1	1
Necrosis,single cell,tubular		0	0	0	6	0	0	0	6
minimal		0	0	0	6	0	0	0	6
NEPHROBLASTOMA		0	0	0	0	0	1	0	0
present		0	0	0	0	0	1	0	0
Liver									
Number examined		6	6	6	6	6	6	6	6
Not remarkable		1	0	0	0	0	1	0	0
Vacuolation,hepatocyte,periportal		2	3	1	1	2	3	5	1
minimal		2	3	1	1	2	2	5	1
mild		0	0	0	0	0	1	0	0
Pigmentation,Kupffer cell		0	0	0	2	0	0	0	1
minimal		0	0	0	2	0	0	0	1
Hematopoiesis,extramedullary		0	0	0	1	0	0	0	0
minimal		0	0	0	1	0	0	0	0
Hemorrhage,focal		0	0	1	0	0	0	0	0
minimal		0	0	1	0	0	0	0	0
Microgranuloma		4	6	5	4	6	5	5	2
minimal		4	6	5	4	6	5	5	2
Necrosis,single cell,hepatocyte		0	0	0	2	0	0	0	1
minimal		0	0	0	2	0	0	0	1
Hypertrophy,hepatocytic,central		0	0	5	5	0	0	0	6
minimal		0	0	5	5	0	0	0	6
Lung(bronchus)									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	5	6	0	0	6
Appearance,alveolar macrophage		0	0	0	1	0	0	0	0
minimal		0	0	0	1	0	0	0	0
Lymph node,mesenteric									
Number examined		6	0	0	6	6	6	6	6
Not remarkable		6	0	0	6	6	6	6	3
Atrophy		0	0	0	0	0	0	0	3
minimal		0	0	0	0	0	0	0	3
Lymph node,submandibular									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Ovary									
Number examined		-	-	-	-	6	0	0	6
Not remarkable		-	-	-	-	6	0	0	6

M : Male, F : Female
- : Not applicable

Table 10-3 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Histopathological findings (After administration period)

Organs / Findings	Sex:	M	M	M	M	F	F	F	F
	Dose(mg/kg):	0	4	20	100	0	4	20	100
	Number:	6	6	6	6	6	6	6	6
Parathyroid									
Number examined		6	0	0	6	6	0	0	5
Not remarkable		6	0	0	6	6	0	0	5
No sample		0	0	0	0	0	0	0	1
Pituitary									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Prostate									
Number examined		6	0	0	6	-	-	-	-
Not remarkable		3	0	0	4	-	-	-	-
Cell infiltration,interstitial		3	0	0	2	-	-	-	-
minimal		3	0	0	1	-	-	-	-
mild		0	0	0	1	-	-	-	-
Sciatic nerve									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Skeletal muscle,femoral									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Spinal cord,thoracic									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Spleen									
Number examined		6	0	0	6	6	6	6	6
Not remarkable		5	0	0	3	6	6	6	4
Atrophy,lymphoid		0	0	0	0	0	0	0	2
minimal		0	0	0	0	0	0	0	2
Hematopoiesis,extramedullary		1	0	0	3	0	0	0	0
minimal		1	0	0	3	0	0	0	0
Stomach									
Number examined		6	6	6	6	6	0	0	6
Not remarkable		6	6	6	4	6	0	0	6
Erosion,glandular stomach		0	0	0	2	0	0	0	0
minimal		0	0	0	2	0	0	0	0
Testis									
Number examined		6	0	0	6	-	-	-	-
Not remarkable		6	0	0	5	-	-	-	-
Atrophy,seminiferous tubular		0	0	0	1	-	-	-	-
minimal		0	0	0	1	-	-	-	-
Thymus									
Number examined		6	6	6	6	6	6	6	6
Not remarkable		6	6	6	3	6	6	6	2
Atrophy		0	0	0	3	0	0	0	4
minimal		0	0	0	2	0	0	0	3
mild		0	0	0	1	0	0	0	0
moderate		0	0	0	0	0	0	0	1
Thyroid									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		5	0	0	5	5	0	0	2
Ectopic thymus		1	0	0	0	0	0	0	1
minimal		1	0	0	0	0	0	0	1
Remnant,ultimobranchial body		1	0	0	1	1	0	0	3
minimal		1	0	0	1	1	0	0	3

M : Male, F : Female
- : Not applicable

Table 10-4 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Histopathological findings (After administration period)

Organs / Findings	Sex:	M	M	M	M	F	F	F	F
	Dose(mg/kg):	0	4	20	100	0	4	20	100
	Number:	6	6	6	6	6	6	6	6
Trachea									
Number examined		6	0	0	6	6	0	0	6
Not remarkable		6	0	0	6	6	0	0	6
Urinary bladder									
Number examined		6	6	6	6	6	6	6	6
Not remarkable		6	6	6	2	6	6	6	0
Hypertrophy,umbrella cell		0	0	0	4	0	0	0	6
minimal		0	0	0	4	0	0	0	6
Uterus									
Number examined		-	-	-	-	6	6	6	6
Not remarkable		-	-	-	-	6	6	6	4
Atrophy		-	-	-	-	0	0	0	2
mild		-	-	-	-	0	0	0	2

M : Male, F : Female
- : Not applicable

Table 10-5 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Histopathological findings (After recovery period)

Organs / Findings	Sex:	M	M	F	F
	Dose(mg/kg):	0	100	0	100
	Number:	6	6	6	6
Adrenal					
Number examined		6	6	6	6
Not remarkable		5	3	6	5
Hypertrophy,glomerular,diffuse		1	3	0	1
minimal		1	3	0	1
Bone+Bone marrow,femoral					
Number examined		6	6	6	6
Not remarkable		6	6	6	6
Bone+Bone marrow,sternal					
Number examined		6	6	6	6
Not remarkable		6	6	6	6
Kidney					
Number examined		6	6	6	6
Not remarkable		3	0	5	0
Dilatation,pelvic		0	0	0	1
moderate		0	0	0	1
Regeneration,tubular		2	1	0	1
minimal		2	1	0	0
mild		0	0	0	1
Basophilic change,tubular		0	6	0	6
minimal		0	4	0	5
mild		0	2	0	1
Mineralization,corticomedullary		0	0	1	0
minimal		0	0	1	0
Cell infiltration,interstitial		2	3	0	0
minimal		2	3	0	0
Liver					
Number examined		6	6	6	6
Not remarkable		3	0	1	2
Vacuolation,hepatocyte,periportal		0	0	3	0
minimal		0	0	2	0
mild		0	0	1	0
Pigmentation,Kupffer cell		0	4	0	0
minimal		0	4	0	0
Hematopoiesis,extramedullary		0	1	0	1
minimal		0	1	0	1
Microgranuloma		3	5	5	4
minimal		3	5	5	4
Hypertrophy,hepatocytic,central		0	3	0	1
minimal		0	3	0	1
Lymph node,mesenteric					
Number examined		0	0	6	6
Not remarkable		0	0	6	6
Spleen					
Number examined		0	0	6	6
Not remarkable		0	0	5	5
Hematopoiesis,extramedullary		0	0	1	1
minimal		0	0	1	1
Stomach					
Number examined		6	6	0	0
Not remarkable		6	6	0	0
Thymus					
Number examined		6	6	6	6
Not remarkable		6	6	6	6

M : Male, F : Female

Table 10-6 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Histopathological findings (After recovery period)

Organs / Findings	Sex:	M	M	F	F
	Dose(mg/kg):	0	100	0	100
	Number:	6	6	6	6
Thyroid					
Number examined		0	0	0	1
Ectopic thymus		0	0	0	1
minimal		0	0	0	1
Remnant,ultimobranchial body		0	0	0	1
minimal		0	0	0	1
Urinary bladder					
Number examined		6	6	6	6
Not remarkable		6	6	6	6
Uterus					
Number examined		-	-	6	6
Not remarkable		-	-	6	6

M : Male, F : Female
- : Not applicable

Appendix 1

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual clinical signs (Administration period)

Dose (mg/kg) : 0

Sex	Animal number	Day of administration													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Male	1001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1002	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1003	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1010	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1012	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	1101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1102	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1104	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1105	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1106	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1107	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1108	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1109	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1110	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1111	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1112	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : No abnormality

Appendix 2 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual clinical signs (Administration period)

Dose (mg/kg) : 0

Sex	Animal number	Day of administration													
		15	16	17	18	19	20	21	22	23	24	25	26	27	28
Male	1001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1002	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1003	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1010	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1012	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	1101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1102	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1104	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1105	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1106	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1107	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1108	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1109	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1110	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1111	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1112	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : No abnormality

Appendix 3 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual clinical signs (Administration period)

Dose (mg/kg) : 4

Sex	Animal number	Day of administration													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Male	2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2002	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2003	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	2101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2102	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2104	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2105	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2106	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : No abnormality

Appendix 4 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual clinical signs (Administration period)

Dose (mg/kg) : 4

Sex	Animal number	Day of administration													
		15	16	17	18	19	20	21	22	23	24	25	26	27	28
Male	2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2002	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2003	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	2101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2102	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2104	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2105	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2106	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : No abnormality

Appendix 5

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual clinical signs (Administration period)

Dose (mg/kg) : 20

Sex	Animal number	Day of administration													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Male	3001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3002	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3003	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	3101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3102	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3104	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3105	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3106	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : No abnormality

Appendix 6

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual clinical signs (Administration period)

Dose (mg/kg) : 20

Sex	Animal number	Day of administration													
		15	16	17	18	19	20	21	22	23	24	25	26	27	28
Male	3001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3002	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3003	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	3101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3102	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3104	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3105	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3106	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : No abnormality

Appendix 7

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual clinical signs (Administration period)

Dose (mg/kg) : 100

Sex	Animal number	Day of administration													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Male	4001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4002	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4003	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4010	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4012	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	4101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4102	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4104	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4105	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4106	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4107	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4108	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4109	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4110	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4111	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4112	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : No abnormality

Appendix 8

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual clinical signs (Administration period)

Dose (mg/kg) : 100

Sex	Animal number	Day of administration													
		15	16	17	18	19	20	21	22	23	24	25	26	27	28
Male	4001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4002	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4003	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4006	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4010	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4012	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	4101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4102	-	-	-	-	-	-	-	-	-	B	B	B	B	B
	4103	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4104	-	A	-	-	A	-	A	A	A	A	-	A	-	A
	4105	-	-	A	-	A	-	-	-	-	-	-	-	-	-
	4106	-	-	-	-	-	-	-	-	-	BD	BD	BD	BD	BD
	4107	-	-	-	-	-	-	-	-	A	A	-	A	-	A
	4108	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4109	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4110	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4111	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4112	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : No abnormality
A : Salivation
B : Unkempt fur
D : Emaciation

Appendix 9

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual clinical signs (Recovery period)

Dose (mg/kg) : 0

Sex	Animal number	Day of recovery													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Male	1007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1010	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1012	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	1107	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1108	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1109	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1110	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1111	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1112	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : No abnormality

Appendix 10 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual clinical signs (Recovery period)

Dose (mg/kg) : 100

Sex	Animal number	Day of recovery													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Male	4007	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4009	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4010	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4011	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4012	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	4107	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4108	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4109	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4110	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4111	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4112	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : No abnormality

Appendix 11

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 1 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1 0 0 1	1 0 0 2	1 0 0 3	1 0 0 4	1 0 0 5	1 0 0 6	1 0 0 7	1 0 0 8	1 0 0 9	1 0 1 0	1 0 1 1	1 0 1 2	1 1 0 1	1 1 0 2	1 1 0 3	1 1 0 4	1 1 0 5	1 1 0 6	1 1 0 7	1 1 0 8	1 1 0 9	1 1 1 0	1 1 1 1	1 1 1 2
Posture a)		N	N	N	N	N	N	N	N	N	N	N	N	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	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	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 12

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 1 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		20001	20002	20003	20004	20005	20006	21001	21002	21003	21004	21005	21006
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 13

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 1 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		3 0 0 1	3 0 0 2	3 0 0 3	3 0 0 4	3 0 0 5	3 0 0 6	3 1 0 1	3 1 0 2	3 1 0 3	3 1 0 4	3 1 0 5	3 1 0 6
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 14

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 1 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		4 0 0 1	4 0 0 2	4 0 0 3	4 0 0 4	4 0 0 5	4 0 0 6	4 0 0 7	4 0 0 8	4 0 0 9	4 0 1 0	4 0 1 1	4 0 1 2	4 1 0 1	4 1 0 2	4 1 0 3	4 1 0 4	4 1 0 5	4 1 0 6	4 1 0 7	4 1 0 8	4 1 0 9	4 1 1 0	4 1 1 1	4 1 1 2
Posture a)		N	N	N	N	N	N	N	N	N	N	N	N	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	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	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 15

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 2 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		10001	10002	10003	10004	10005	10006	10007	10008	10009	10010	10011	10012	11001	11002	11003	11004	11005	11006	11007	11008	11009	11010	11011	11012
Posture a)		N	N	N	N	N	N	N	N	N	N	N	N	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	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	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 16

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 2 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		20001	20002	20003	20004	20005	20006	21001	21002	21003	21004	21005	21006
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 17

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 2 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		3 0 0 1	3 0 0 2	3 0 0 3	3 0 0 4	3 0 0 5	3 0 0 6	3 1 0 1	3 1 0 2	3 1 0 3	3 1 0 4	3 1 0 5	3 1 0 6
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 18

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 2 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		4 0 0 1	4 0 0 2	4 0 0 3	4 0 0 4	4 0 0 5	4 0 0 6	4 0 0 7	4 0 0 8	4 0 0 9	4 0 1 0	4 0 1 1	4 0 1 2	4 1 0 1	4 1 0 2	4 1 0 3	4 1 0 4	4 1 0 5	4 1 0 6	4 1 0 7	4 1 0 8	4 1 0 9	4 1 1 0	4 1 1 1	4 1 1 2
Posture a)		N	N	N	N	N	N	N	N	N	N	N	N	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	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	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 19

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 3 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112
Posture a)		N	N	N	N	N	N	N	N	N	N	N	N	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	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	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 20

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 3 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		2 0 0 1	2 0 0 2	2 0 0 3	2 0 0 4	2 0 0 5	2 0 0 6	2 1 0 1	2 1 0 2	2 1 0 3	2 1 0 4	2 1 0 5	2 1 0 6
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 21 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 3 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		3 0 0 1	3 0 0 2	3 0 0 3	3 0 0 4	3 0 0 5	3 0 0 6	3 1 0 1	3 1 0 2	3 1 0 3	3 1 0 4	3 1 0 5	3 1 0 6
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 22

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 3 of administration period)

Dose (mg/kg) : 100

Parameter		Male												Female											
	Animal number	4 0 0 1	4 0 0 2	4 0 0 3	4 0 0 4	4 0 0 5	4 0 0 6	4 0 0 7	4 0 0 8	4 0 0 9	4 0 1 0	4 0 1 1	4 0 1 2	4 1 0 1	4 1 0 2	4 1 0 3	4 1 0 4	4 1 0 5	4 1 0 6	4 1 0 7	4 1 0 8	4 1 0 9	4 1 1 0	4 1 1 1	4 1 1 2
Posture a)		N	N	N	N	N	N	N	N	N	N	N	N	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	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	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 23

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 4 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1 0 0 1	1 0 0 2	1 0 0 3	1 0 0 4	1 0 0 5	1 0 0 6	1 0 0 7	1 0 0 8	1 0 0 9	1 0 1 0	1 0 1 1	1 0 1 2	1 1 0 1	1 1 0 2	1 1 0 3	1 1 0 4	1 1 0 5	1 1 0 6	1 1 0 7	1 1 0 8	1 1 0 9	1 1 1 0	1 1 1 1	1 1 1 2
Posture a)		N	N	N	N	N	N	N	N	N	N	N	N	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	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	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 24

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 4 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		20001	20002	20003	20004	20005	20006	21001	21002	21003	21004	21005	21006
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 25

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 4 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		3 0 0 1	3 0 0 2	3 0 0 3	3 0 0 4	3 0 0 5	3 0 0 6	3 1 0 1	3 1 0 2	3 1 0 3	3 1 0 4	3 1 0 5	3 1 0 6
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 26

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 4 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		4 0 0 1	4 0 0 2	4 0 0 3	4 0 0 4	4 0 0 5	4 0 0 6	4 0 0 7	4 0 0 8	4 0 0 9	4 0 1 0	4 0 1 1	4 0 1 2	4 1 0 1	4 1 0 2	4 1 0 3	4 1 0 4	4 1 0 5	4 1 0 6	4 1 0 7	4 1 0 8	4 1 0 9	4 1 1 0	4 1 1 1	4 1 1 2
Posture a)		N	N	N	N	N	N	N	N	N	N	N	N	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	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	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 27

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 1 of recovery period)

Dose (mg/kg) : 0

Parameter	Animal number	Male						Female					
		1 0 0 7	1 0 0 8	1 0 0 9	1 0 1 0	1 0 1 1	1 0 1 2	1 1 0 7	1 1 0 8	1 1 0 9	1 1 1 0	1 1 1 1	1 1 1 2
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 28

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 1 of recovery period)

Dose (mg/kg) : 100

Parameter	Animal number	Male						Female					
		4 0 0 7	4 0 0 8	4 0 0 9	4 0 1 0	4 0 1 1	4 0 1 2	4 1 0 7	4 1 0 8	4 1 0 9	4 1 1 0	4 1 1 1	4 1 1 2
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 29

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 2 of recovery period)

Dose (mg/kg) : 0

Parameter	Animal number	Male						Female					
		1 0 0 7	1 0 0 8	1 0 0 9	1 0 1 0	1 0 1 1	1 0 1 2	1 1 0 7	1 1 0 8	1 1 0 9	1 1 1 0	1 1 1 1	1 1 1 2
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 30 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : home cage observations (Week 2 of recovery period)

Dose (mg/kg) : 100

Parameter	Animal number	Male						Female					
		4 0 0 7	4 0 0 8	4 0 0 9	4 0 1 0	4 0 1 1	4 0 1 2	4 1 0 7	4 1 0 8	4 1 0 9	4 1 1 0	4 1 1 1	4 1 1 2
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 31

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 1 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112
Ease of removal from cage a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling m)		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) -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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 32 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 1 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		20001	20002	20003	20004	20005	20006	21001	21002	21003	21004	21005	21006
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 33 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 1 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		30001	30002	30003	30004	30005	30006	31001	31002	31003	31004	31005	31006
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 34

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 1 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		4001	4002	4003	4004	4005	4006	4007	4008	4009	4010	4011	4012	4101	4102	4103	4104	4105	4106	4107	4108	4109	4110	4111	4112
Ease of removal from cage a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling m)		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) -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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 35 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 2 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112
Ease of removal from cage a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling m)		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) -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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 36 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 2 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		20001	20002	20003	20004	20005	20006	21001	21002	21003	21004	21005	21006
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 37 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 2 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		30001	30002	30003	30004	30005	30006	31001	31002	31003	31004	31005	31006
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 38

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 2 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		4001	4002	4003	4004	4005	4006	4007	4008	4009	4010	4011	4012	4101	4102	4103	4104	4105	4106	4107	4108	4109	4110	4111	4112
Ease of removal from cage a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	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	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	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	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	0	0	0	1	0	0	0	0	0	0	0	0
Abnormal respiration l)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling m)		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) -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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 39 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 3 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112
Ease of removal from cage a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling m)		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) -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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 40 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 3 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		20001	20002	20003	20004	20005	20006	21001	21002	21003	21004	21005	21006
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 41 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 3 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		30001	30002	30003	30004	30005	30006	31001	31002	31003	31004	31005	31006
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 42

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 3 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		401	402	403	404	405	406	407	408	409	410	411	412	411	412	413	414	415	416	417	418	419	420	421	422
Ease of removal from cage a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	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	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	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	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	0	0	0	2	1	0	2	0	0	0	0	0
Abnormal respiration l)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling m)		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) -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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 43

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 4 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112
Ease of removal from cage a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling m)		0	0	0	0	0	0	0	1	0	0	0	0	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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 44 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 4 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		20001	20002	20003	20004	20005	20006	21001	21002	21003	21004	21005	21006
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
Reactivity to handling m)		0	0	0	0	0	0	0	0	0	0	0	2

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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 45

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 4 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		30001	30002	30003	30004	30005	30006	31001	31002	31003	31004	31005	31006
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 46

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 4 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		4001	4002	4003	4004	4005	4006	4007	4008	4009	4010	4011	4012	4101	4102	4103	4104	4105	4106	4107	4108	4109	4110	4111	4112
Ease of removal from cage a)		0	0	0	0	0	0	0	0	0	0	0	0	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	0	1	0	0	0	1	0	0	0	0	0	0
Skin c)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	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	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	0	0	0	1	0	0	1	0	1	0	1	0
Abnormal respiration l)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reactivity to handling m)		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) -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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 47 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 1 of recovery period)

Dose (mg/kg) : 0

Parameter	Animal number	Male						Female					
		10007	10008	10009	10010	10011	10012	11007	11008	11009	11010	11011	11012
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 48 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 1 of recovery period)

Dose (mg/kg) : 100

Parameter	Animal number	Male						Female					
		40007	40008	40009	40010	40011	40012	41007	41008	41009	41010	41011	41012
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 49 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 2 of recovery period)

Dose (mg/kg) : 0

Parameter	Animal number	Male						Female					
		10007	10008	10009	10010	10011	10012	11007	11008	11009	11010	11011	11012
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 50

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : in-the-hand observations (Week 2 of recovery period)

Dose (mg/kg) : 100

Parameter	Animal number	Male						Female					
		40007	40008	40009	40010	40011	40012	41007	41008	41009	41010	41011	41012
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
Reactivity to handling m)		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) -1: Atypically docile, 0: Easy, 1: Slightly awkward, 2: Difficult, 3: Very difficult

Appendix 51

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 1 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112
Arousal a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Rearing count		0	5	5	4	0	5	4	4	2	6	4	4	5	8	5	2	4	4	5	4	4	9	7	5
Defecation count		3	0	1	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)		1	0	0	0	2	0	0	1	0	0	0	0	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 52

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 1 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		20001	20002	20003	20004	20005	20006	21001	21002	21003	21004	21005	21006
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 count		4	3	8	5	8	0	8	2	4	4	7	9
Defecation count		0	1	0	0	0	3	0	0	0	0	0	0
Urination h)		1	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 53 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 1 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		30001	30002	30003	30004	30005	30006	31001	31002	31003	31004	31005	31006
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 count		5	8	1	6	3	2	5	8	9	4	2	7
Defecation count		3	0	0	0	0	0	0	0	0	0	0	0
Urination h)		1	0	2	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 54 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 1 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		4001	4002	4003	4004	4005	4006	4007	4008	4009	4010	4011	4012	4101	4102	4103	4104	4105	4106	4107	4108	4109	4110	4111	4112
Arousal a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Rearing count		0	5	1	3	8	6	3	5	4	6	3	3	7	3	1	4	5	5	7	2	3	3	2	9
Defecation count		0	0	0	1	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)		2	0	1	1	0	0	2	0	0	0	0	0	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 55

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 2 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112
Arousal a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Rearing count		1	4	6	3	1	5	7	1	4	6	1	6	8	9	8	11	8	10	10	8	6	12	9	8
Defecation count		1	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)		0	0	0	0	1	0	0	1	0	0	0	0	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 56

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 2 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		2001	2002	2003	2004	2005	2006	2101	2102	2103	2104	2105	2106
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 count		8	5	7	5	1	1	9	6	5	7	7	8
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	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 57

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 2 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		30001	30002	30003	30004	30005	30006	31001	31002	31003	31004	31005	31006
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 count		1	5	8	9	4	0	7	8	7	10	5	8
Defecation count		1	0	0	0	0	1	0	0	0	0	0	0
Urination h)		1	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 58

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 2 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		4 0 0 1	4 0 0 2	4 0 0 3	4 0 0 4	4 0 0 5	4 0 0 6	4 0 0 7	4 0 0 8	4 0 0 9	4 0 1 0	4 0 1 1	4 0 1 2	4 1 0 1	4 1 0 2	4 1 0 3	4 1 0 4	4 1 0 5	4 1 0 6	4 1 0 7	4 1 0 8	4 1 0 9	4 1 1 0	4 1 1 1	4 1 1 2
Arousal a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Rearing count		0	3	0	7	4	8	5	3	3	5	1	2	12	6	6	2	6	6	7	4	2	4	2	9
Defecation count		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)		2	0	0	0	0	0	0	0	0	0	0	0	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 59

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 3 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112
Arousal a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Rearing count		10	5	3	3	0	8	5	1	4	6	7	2	10	7	8	9	13	10	10	11	7	11	4	10
Defecation count		0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Urination h)		0	0	0	0	0	0	0	2	0	0	0	0	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 60

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 3 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		201	202	203	204	205	206	211	212	213	214	215	216
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 count		7	2	6	3	2	2	11	10	5	9	14	10
Defecation count		0	1	0	0	0	0	0	0	0	0	0	0
Urination h)		1	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 61 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 3 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		30001	30002	30003	30004	30005	30006	31001	31002	31003	31004	31005	31006
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 count		5	2	5	4	4	2	11	13	8	9	7	14
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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 62

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 3 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		4 0 0 1	4 0 0 2	4 0 0 3	4 0 0 4	4 0 0 5	4 0 0 6	4 0 0 7	4 0 0 8	4 0 0 9	4 0 1 0	4 0 1 1	4 0 1 2	4 1 0 1	4 1 0 2	4 1 0 3	4 1 0 4	4 1 0 5	4 1 0 6	4 1 0 7	4 1 0 8	4 1 0 9	4 1 1 0	4 1 1 1	4 1 1 2
Arousal a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Gait e)		0	0	0	0	0	0	0	0	0	0	U	0	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Rearing count		0	4	0	7	5	7	3	5	3	9	0	4	15	7	8	6	4	4	4	6	5	5	2	8
Defecation count		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)		2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 63

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 4 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112
Arousal a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Rearing count		5	3	1	6	1	3	7	0	5	4	9	3	5	9	6	7	11	9	10	7	9	8	8	7
Defecation count		0	0	0	0	0	0	0	0	0	0	0	0	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	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 64 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 4 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		20001	20002	20003	20004	20005	20006	21001	21002	21003	21004	21005	21006
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 count		7	4	3	5	5	3	9	7	8	9	10	8
Defecation count		0	0	0	0	0	0	0	0	0	0	0	0
Urination h)		1	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 65

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 4 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		3 0 0 1	3 0 0 2	3 0 0 3	3 0 0 4	3 0 0 5	3 0 0 6	3 1 0 1	3 1 0 2	3 1 0 3	3 1 0 4	3 1 0 5	3 1 0 6
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	U	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 count		0	1	6	7	2	3	10	9	9	6	7	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	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 66

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 4 of administration period)

Dose (mg/kg) : 100

Parameter	Animal number	Male												Female											
		4001	4002	4003	4004	4005	4006	4007	4008	4009	4010	4011	4012	4101	4102	4103	4104	4105	4106	4107	4108	4109	4110	4111	4112
Arousal a)		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0	0
Rearing count		0	2	0	5	3	6	2	6	5	7	0	4	10	5	6	7	4	4	3	8	6	4	5	7
Defecation count		0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urination h)		2	0	1	0	0	0	0	0	0	0	0	0	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 67 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 1 of recovery period)

Dose (mg/kg) : 0

Parameter	Animal number	Male						Female					
		1 0 0 7	1 0 0 8	1 0 0 9	1 0 1 0	1 0 1 1	1 0 1 2	1 1 0 7	1 1 0 8	1 1 0 9	1 1 1 0	1 1 1 1	1 1 1 2
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 count		6	7	4	4	8	8	10	9	12	9	7	5
Defecation count		0	0	0	0	0	0	0	0	0	0	0	0
Urination h)		1	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 68 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 1 of recovery period)

Dose (mg/kg) : 100

Parameter	Animal number	Male						Female					
		4007	4008	4009	4010	4011	4012	4107	4108	4109	4110	4111	4112
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 count		1	6	3	2	3	6	8	6	6	4	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 69 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 2 of recovery period)

Dose (mg/kg) : 0

Parameter	Animal number	Male						Female					
		1007	1008	1009	1010	1011	1012	1107	1108	1109	1110	1111	1112
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 count		8	2	5	7	8	7	12	6	10	12	9	5
Defecation count		0	0	0	0	0	0	0	0	0	0	0	0
Urination h)		1	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 70 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual detailed clinical signs : open field observation (Week 2 of recovery period)

Dose (mg/kg) : 100

Parameter	Animal number	Male						Female					
		40007	40008	40009	40010	40011	40012	41007	41008	41009	41010	41011	41012
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 count		3	7	4	4	3	7	10	7	10	7	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 four)
h) 0: None, 1: Small amount, 2: Moderate amount, 3: Large/excessive amount

Appendix 71 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual manipulative test (Week 4 of administration period)

Dose (mg/kg) : 0

Parameter	Animal number	Male												Female											
		1 0 0 1	1 0 0 2	1 0 0 3	1 0 0 4	1 0 0 5	1 0 0 6	1 0 0 7	1 0 0 8	1 0 0 9	1 0 1 0	1 0 1 1	1 0 1 2	1 1 0 1	1 1 0 2	1 1 0 3	1 1 0 4	1 1 0 5	1 1 0 6	1 1 0 7	1 1 0 8	1 1 0 9	1 1 1 0	1 1 1 1	1 1 1 2
Auditory response a)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach response b)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Touch response c)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tail pinch response d)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pupillary reflex e)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Aerial righting reflex (Total score)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Landing foot splay (mm)		68	87	68	40	76	80	83	107	95	89	45	63	65	81	47	78	56	82	50	44	51	48	50	66

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 72 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual manipulative test (Week 4 of administration period)

Dose (mg/kg) : 4

Parameter	Animal number	Male						Female					
		2001	2002	2003	2004	2005	2006	2011	2012	2013	2014	2015	2016
Auditory response a)		0	0	0	0	0	0	0	0	0	0	0	0
Approach response b)		0	0	0	0	0	0	0	0	0	0	0	0
Touch response c)		0	0	0	0	0	0	0	0	0	0	0	0
Tail pinch response d)		0	0	0	0	0	0	0	0	0	0	0	0
Pupillary reflex e)		P	P	P	P	P	P	P	P	P	P	P	P
Aerial righting reflex (Total score)		0	0	0	0	0	0	0	0	0	0	0	0
Landing foot splay (mm)		76	85	61	48	66	68	33	44	59	76	46	40

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 73

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual manipulative test (Week 4 of administration period)

Dose (mg/kg) : 20

Parameter	Animal number	Male						Female					
		30001	30002	30003	30004	30005	30006	31001	31002	31003	31004	31005	31006
Auditory response a)		0	0	0	0	0	0	0	0	0	0	0	0
Approach response b)		0	0	0	0	0	0	0	0	0	0	0	0
Touch response c)		0	0	0	0	0	0	0	0	0	0	0	0
Tail pinch response d)		0	0	0	0	0	0	0	0	0	0	0	0
Pupillary reflex e)		P	P	P	P	P	P	P	P	P	P	P	P
Aerial righting reflex (Total score)		0	0	0	0	0	0	0	0	0	0	0	0
Landing foot splay (mm)		67	63	78	66	67	73	56	47	70	53	41	39

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 74

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual manipulative test (Week 4 of administration period)

Dose (mg/kg) : 100

Parameter		Male												Female											
	Animal number	4 0 0 1	4 0 0 2	4 0 0 3	4 0 0 4	4 0 0 5	4 0 0 6	4 0 0 7	4 0 0 8	4 0 0 9	4 0 1 0	4 0 1 1	4 0 1 2	4 1 0 1	4 1 0 2	4 1 0 3	4 1 0 4	4 1 0 5	4 1 0 6	4 1 0 7	4 1 0 8	4 1 0 9	4 1 1 0	4 1 1 1	4 1 1 2
Auditory response a)		0	0	0	0	-1	0	0	0	-1	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach response b)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Touch response c)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tail pinch response d)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0
Pupillary reflex e)		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Aerial righting reflex (Total score)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Landing foot splay (mm)		59	63	78	99	65	58	92	68	59	47	49	92	35	39	20	47	88	43	64	72	49	55	80	79

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 75 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual manipulative test (Week 2 of recovery period)

Dose (mg/kg) : 0

Parameter	Animal number	Male						Female					
		1007	1008	1009	1010	1011	1012	1007	1008	1009	1010	1011	1012
Auditory response a)		0	0	0	0	0	0	0	0	0	0	0	0
Approach response b)		0	0	0	0	0	0	0	0	0	0	0	0
Touch response c)		0	0	0	0	0	0	0	0	0	0	0	0
Tail pinch response d)		0	0	0	0	0	0	0	0	0	0	0	0
Pupillary reflex e)		P	P	P	P	P	P	P	P	P	P	P	P
Aerial righting reflex (Total score)		0	0	0	0	0	0	0	0	0	0	0	0
Landing foot splay (mm)		83	92	125	83	100	66	72	53	55	93	58	61

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 76

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual manipulative test (Week 2 of recovery period)

Dose (mg/kg) : 100

Parameter	Animal number	Male						Female					
		4 0 0 7	4 0 0 8	4 0 0 9	4 0 1 0	4 0 1 1	4 0 1 2	4 1 0 7	4 1 0 8	4 1 0 9	4 1 1 0	4 1 1 1	4 1 1 2
Auditory response a)		0	0	0	0	0	0	0	0	0	0	0	0
Approach response b)		0	0	0	0	0	0	0	0	0	0	0	0
Touch response c)		0	0	0	0	0	0	0	0	0	0	0	0
Tail pinch response d)		0	0	0	0	0	0	0	0	0	0	0	0
Pupillary reflex e)		P	P	P	P	P	P	P	P	P	P	P	P
Aerial righting reflex (Total score)		0	0	0	0	0	0	0	0	0	0	0	0
Landing foot splay (mm)		93	79	78	69	50	103	53	73	46	56	93	67

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 77

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual grip strength (Week 4 of administration period)

Dose (mg/kg) : 0

Sex	Animal number	Fore limb g	Hind limb g
Male	1001	996	534
	1002	1380	689
	1003	1064	513
	1004	988	502
	1005	909	413
	1006	987	710
	1007	1213	758
	1008	1251	739
	1009	1206	446
	1010	1120	510
	1011	1351	467
	1012	1142	714
	Mean	1134	583
	S.D.	151	128
Female	1101	960	526
	1102	1129	596
	1103	1187	552
	1104	797	414
	1105	876	483
	1106	1033	540
	1107	1143	534
	1108	979	379
	1109	1016	557
	1110	1037	503
	1111	963	400
	1112	896	500
	Mean	1001	499
	S.D.	115	68

Appendix 78 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual grip strength (Week 4 of administration period)

Dose (mg/kg) : 4

Sex	Animal number	Fore limb g	Hind limb g
Male	2001	925	596
	2002	1401	530
	2003	915	336
	2004	1001	489
	2005	768	587
	2006	895	464
	Mean	984	500
	S.D.	218	96
Female	2101	1003	695
	2102	867	421
	2103	872	371
	2104	962	472
	2105	1072	374
	2106	861	570
	Mean	940	484
	S.D.	87	127

Appendix 79

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual grip strength (Week 4 of administration period)

Dose (mg/kg) : 20

Sex	Animal number	Fore limb g	Hind limb g
Male	3001	873	719
	3002	1181	788
	3003	867	454
	3004	1194	648
	3005	909	366
	3006	1002	528
	Mean	1004	584
	S.D.	150	162
Female	3101	947	400
	3102	915	323
	3103	918	470
	3104	898	453
	3105	1050	492
	3106	1067	395
	Mean	966	422
	S.D.	74	62

Appendix 80

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual grip strength (Week 4 of administration period)

Dose (mg/kg) : 100

Sex	Animal number	Fore limb g	Hind limb g
Male	4001	1232	769
	4002	606	385
	4003	1076	352
	4004	1554	739
	4005	948	768
	4006	986	514
	4007	1124	579
	4008	1130	455
	4009	969	681
	4010	959	480
	4011	1104	738
	4012	988	385
	Mean	1056	570
	S.D.	220	162
Female	4101	754	344
	4102	567	358
	4103	660	308
	4104	716	304
	4105	1146	552
	4106	607	366
	4107	994	397
	4108	928	369
	4109	866	317
	4110	824	536
	4111	1130	571
	4112	708	480
	Mean	825	409
	S.D.	193	99

Appendix 81 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual grip strength (Week 2 of recovery period)

Dose (mg/kg) : 0

Sex	Animal number	Fore limb g	Hind limb g
Male	1007	1760	1019
	1008	1660	1002
	1009	1679	994
	1010	1544	946
	1011	1496	1076
	1012	1630	1024
	Mean	1628	1010
	S.D.	95	43
Female	1107	1201	832
	1108	1190	763
	1109	1258	803
	1110	1114	884
	1111	1137	613
	1112	1009	800
	Mean	1152	783
	S.D.	86	92

Appendix 82

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual grip strength (Week 2 of recovery period)

Dose (mg/kg) : 100

Sex	Animal number	Fore limb g	Hind limb g
Male	4007	1118	767
	4008	1724	764
	4009	1121	593
	4010	1247	493
	4011	919	546
	4012	1261	636
	Mean	1232	633
	S.D.	271	113
Female	4107	1081	455
	4108	1002	561
	4109	1068	571
	4110	916	719
	4111	1083	675
	4112	886	509
	Mean	1006	582
	S.D.	87	99

Appendix 83 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual motor activity (Week 4 of administration period)

Dose (mg/kg) : 0

Sex	Animal number	Interval (minutes)						
		0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
Male	1001	382	370	326	260	326	397	2061
	1002	422	383	370	399	285	34	1893
	1003	431	357	360	340	368	148	2004
	1004	355	350	296	256	35	8	1300
	1005	355	335	329	203	15	3	1240
	1006	374	272	279	156	296	271	1648
	1007	409	345	255	292	249	38	1588
	1008	437	373	316	211	44	14	1395
	1009	432	275	279	202	239	151	1578
	1010	362	350	316	264	309	332	1933
	1011	429	329	334	200	264	104	1660
	1012	409	316	250	339	364	172	1850
	Mean	400	338	309	260	233	139	1679
	S.D.	32	36	38	72	128	134	274
Female	1101	374	345	134	158	283	265	1559
	1102	371	304	22	234	31	6	968
	1103	392	347	358	293	270	312	1972
	1104	399	320	272	227	253	258	1729
	1105	356	319	255	144	182	233	1489
	1106	404	314	182	60	154	315	1429
	1107	312	230	276	297	255	250	1620
	1108	414	350	263	44	276	294	1641
	1109	367	345	179	225	315	155	1586
	1110	390	350	328	352	334	310	2064
	1111	316	208	242	132	19	106	1023
	1112	396	336	412	352	285	339	2120
	Mean	374	314	244	210	221	237	1600
	S.D.	33	47	104	104	104	100	359

Unit : Count

Appendix 84

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual motor activity (Week 4 of administration period)

Dose (mg/kg) : 4

Sex	Animal number	Interval (minutes)						
		0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
Male	2001	408	314	248	5	0	13	988
	2002	454	220	70	285	341	295	1665
	2003	348	381	344	276	306	350	2005
	2004	386	340	308	375	251	304	1964
	2005	452	398	283	254	224	376	1987
	2006	428	363	264	278	313	115	1761
	Mean	413	336	253	246	239	242	1728
	S.D.	41	64	96	125	125	145	388
Female	2101	380	350	341	281	260	285	1897
	2102	445	326	192	280	301	133	1677
	2103	354	298	225	4	2	291	1174
	2104	431	342	308	121	201	344	1747
	2105	438	394	322	421	297	226	2098
	2106	450	450	349	246	301	172	1968
	Mean	416	360	290	226	227	242	1760
	S.D.	40	54	65	145	117	80	325

Unit : Count

Appendix 85 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual motor activity (Week 4 of administration period)

Dose (mg/kg) : 20

Sex	Animal number	Interval (minutes)						
		0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
Male	3001	441	344	363	345	347	230	2070
	3002	468	375	325	236	199	363	1966
	3003	381	343	250	129	56	16	1175
	3004	400	366	375	233	166	1	1541
	3005	418	339	279	345	235	332	1948
	3006	390	245	218	255	224	50	1382
	Mean	416	335	302	257	205	165	1680
	S.D.	33	47	63	81	95	163	366
Female	3101	430	368	367	274	268	331	2038
	3102	453	432	358	348	215	139	1945
	3103	395	325	366	301	289	191	1867
	3104	393	347	386	337	279	302	2044
	3105	464	317	382	274	313	292	2042
	3106	344	357	357	298	343	292	1991
	Mean	413	358	369	305	285	258	1988
	S.D.	45	41	12	31	43	75	71

Unit : Count

Appendix 86 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual motor activity (Week 4 of administration period)

Dose (mg/kg) : 100

Sex	Animal number	Interval (minutes) 0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
Male	4001	202	187	224	221	324	96	1254
	4002	240	204	303	154	225	86	1212
	4003	257	265	246	193	61	228	1250
	4004	390	333	344	262	304	205	1838
	4005	238	282	208	111	12	7	858
	4006	289	216	135	290	103	31	1064
	4007	262	214	208	186	183	228	1281
	4008	221	184	233	181	172	101	1092
	4009	202	262	137	196	177	9	983
	4010	338	337	302	190	247	347	1761
	4011	196	199	194	128	195	234	1146
	4012	245	328	197	71	228	57	1126
	Mean	257	251	228	182	186	136	1239
	S.D.	58	58	64	61	92	109	289
Female	4101	363	253	255	313	328	287	1799
	4102	195	301	145	190	53	20	904
	4103	220	88	27	48	0	5	388
	4104	358	150	110	159	105	69	951
	4105	327	348	342	303	359	413	2092
	4106	234	73	74	6	0	1	388
	4107	240	217	232	218	132	117	1156
	4108	181	206	183	235	27	1	833
	4109	309	139	219	256	222	36	1181
	4110	277	348	229	238	162	264	1518
	4111	334	294	281	309	183	394	1795
	4112	289	267	256	325	149	220	1506
	Mean	277	224	196	217	143	152	1209
	S.D.	63	95	92	103	118	156	548

Unit : Count

Appendix 87 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual motor activity (Week 2 of recovery period)

Dose (mg/kg) : 0

Sex	Animal number	Interval (minutes)						
		0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
Male	1007	315	347	336	236	316	327	1877
	1008	401	384	316	80	73	172	1426
	1009	320	271	198	226	191	188	1394
	1010	302	209	225	238	218	119	1311
	1011	302	340	161	97	190	218	1308
	1012	378	385	315	259	275	295	1907
	Mean	336	323	259	189	211	220	1537
	S.D.	42	69	73	79	84	78	279
Female	1107	221	274	193	145	138	94	1065
	1108	359	269	217	295	245	310	1695
	1109	287	276	249	185	250	242	1489
	1110	366	346	328	182	113	238	1573
	1111	356	186	49	21	212	199	1023
	1112	340	259	251	198	174	221	1443
	Mean	322	268	215	171	189	217	1381
	S.D.	57	51	93	89	57	71	275

Unit : Count

Appendix 88 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual motor activity (Week 2 of recovery period)

Dose (mg/kg) : 100

Sex	Animal number	Interval (minutes)						
		0-10	10-20	20-30	30-40	40-50	50-60	Total(0-60)
Male	4007	277	189	195	169	222	221	1273
	4008	389	332	294	331	307	218	1871
	4009	350	325	329	213	366	291	1874
	4010	388	337	250	365	219	331	1890
	4011	417	314	315	272	329	254	1901
	4012	341	331	274	256	259	250	1711
	Mean	360	305	276	268	284	261	1753
	S.D.	49	57	49	73	60	43	246
Female	4107	352	312	282	227	269	225	1667
	4108	351	235	235	161	210	58	1250
	4109	376	253	188	229	202	285	1533
	4110	306	263	364	324	309	267	1833
	4111	360	302	211	320	279	307	1779
	4112	405	409	371	338	290	357	2170
	Mean	358	296	275	267	260	250	1705
	S.D.	33	63	78	71	44	104	309

Unit : Count

Appendix 89 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual body weight (Administration period)

Dose (mg/kg) : 0

Sex	Animal number	Day of administration 1	4	7	10	14	17	21	24	28	Gain 1-28
Male	1001	231	259	292	321	361	388	426	442	474	243
	1002	227	258	295	327	368	390	429	446	470	243
	1003	213	234	260	283	306	316	335	344	361	148
	1004	209	228	249	263	286	305	318	322	339	130
	1005	217	238	266	286	307	319	334	344	361	144
	1006	221	251	284	311	347	368	398	406	431	210
	1007	223	251	282	310	345	362	395	410	436	213
	1008	218	241	270	306	349	376	413	424	449	231
	1009	213	241	271	300	337	361	381	402	419	206
	1010	217	239	258	276	309	329	359	374	398	181
	1011	214	240	274	308	350	374	409	421	443	229
	1012	234	262	303	337	377	405	433	459	485	251
	Mean	220	245	275	302	337	358	386	400	422	202
	S.D.	8	11	16	22	28	33	40	44	48	42
Female	1101	162	165	174	186	191	207	212	217	214	52
	1102	170	181	191	212	224	242	251	261	268	98
	1103	157	166	177	183	193	210	223	231	245	88
	1104	155	164	175	181	188	192	202	219	224	69
	1105	151	161	172	185	197	199	210	224	232	81
	1106	149	153	163	174	184	191	200	205	207	58
	1107	151	161	172	181	192	199	207	220	226	75
	1108	164	167	183	197	209	220	237	237	251	87
	1109	165	171	183	186	206	220	233	236	249	84
	1110	159	173	180	191	205	204	216	240	243	84
	1111	151	164	175	181	190	196	204	214	216	65
	1112	154	158	158	173	194	203	206	227	235	81
	Mean	157	165	175	186	198	207	217	228	234	77
	S.D.	7	7	9	11	11	15	16	15	18	13

Unit : g

Appendix 90 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual body weight (Administration period)

Dose (mg/kg) : 4

Sex	Animal number	Day of administration 1	4	7	10	14	17	21	24	28	Gain 1-28
Male	2001	215	240	273	297	339	358	386	400	419	204
	2002	221	245	276	304	341	365	394	409	429	208
	2003	226	257	284	310	336	355	379	396	424	198
	2004	222	251	288	317	358	390	428	447	477	255
	2005	214	239	267	293	328	351	373	387	414	200
	2006	230	262	295	329	369	393	425	448	473	243
	Mean	221	249	281	308	345	369	398	415	439	218
	S.D.	6	9	10	13	15	18	24	27	28	25
Female	2101	154	160	172	185	194	204	209	225	227	73
	2102	151	157	170	185	196	206	217	224	225	74
	2103	164	173	193	207	221	228	235	234	237	73
	2104	156	164	165	187	197	214	225	236	238	82
	2105	164	179	189	197	212	217	227	255	259	95
	2106	154	167	176	185	201	206	211	235	240	86
	Mean	157	167	178	191	204	213	221	235	238	81
	S.D.	6	8	11	9	11	9	10	11	12	9

Unit : g

Appendix 91 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual body weight (Administration period)

Dose (mg/kg) : 20

Sex	Animal number	Day of administration 1	4	7	10	14	17	21	24	28	Gain 1-28
Male	3001	227	246	274	300	327	345	364	379	396	169
	3002	210	235	266	296	333	360	380	381	399	189
	3003	212	230	254	275	304	329	348	355	370	158
	3004	223	242	272	301	333	351	371	388	404	181
	3005	225	246	276	301	334	353	376	385	402	177
	3006	216	239	268	295	335	367	397	419	447	231
	Mean	219	240	268	295	328	351	373	385	403	184
	S.D.	7	6	8	10	12	13	16	21	25	25
Female	3101	168	181	191	197	211	229	244	251	261	93
	3102	154	157	164	170	183	200	209	220	232	78
	3103	152	160	171	185	195	198	205	220	227	75
	3104	152	155	166	176	184	196	201	202	207	55
	3105	160	171	184	194	203	209	218	221	233	73
	3106	163	177	191	207	226	234	250	266	273	110
	Mean	158	167	178	188	200	211	221	230	239	81
	S.D.	7	11	12	14	17	17	21	24	24	19

Unit : g

Appendix 92 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual body weight (Administration period)

Dose (mg/kg) : 100

Sex	Animal number	Day of administration 1	4	7	10	14	17	21	24	28	Gain 1-28
Male	4001	215	230	246	268	289	307	323	326	330	115
	4002	216	215	211	223	216	214	216	216	236	20
	4003	223	239	260	283	312	333	346	357	363	140
	4004	230	247	269	291	314	329	345	352	350	120
	4005	216	230	255	284	308	325	336	336	324	108
	4006	209	230	248	264	297	323	343	339	350	141
	4007	218	226	239	259	274	281	289	291	304	86
	4008	228	242	259	271	292	307	320	321	337	109
	4009	212	202	191	183	183	191	198	216	239	27
	4010	221	232	249	272	295	313	329	333	342	121
	4011	224	220	223	238	243	229	213	207	237	13
	4012	212	217	236	261	282	294	304	309	311	99
	Mean	219	228	241	258	275	287	297	300	310	92
	S.D.	7	13	22	30	41	49	56	56	47	46
Female	4101	161	169	176	182	193	202	216	222	227	66
	4102	177	172	172	167	180	184	184	168	174	-3
	4103	156	161	166	171	180	183	185	175	170	14
	4104	154	158	160	166	172	181	183	180	175	21
	4105	153	160	167	169	177	185	188	192	187	34
	4106	153	156	159	156	151	148	141	138	139	-14
	4107	156	160	164	180	187	192	199	200	199	43
	4108	159	167	174	176	185	191	202	202	184	25
	4109	166	162	166	178	191	195	196	197	185	19
	4110	153	169	175	187	198	197	197	196	200	47
	4111	147	159	164	172	177	182	187	184	191	44
	4112	154	160	168	176	182	189	196	200	200	46
	Mean	157	163	168	173	181	186	190	188	186	29
	S.D.	8	5	6	8	12	14	18	21	21	23

Unit : g

Appendix 93 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual body weight (Recovery period)

Dose (mg/kg) : 0

Sex	Animal number	Day of recovery 1	3	7	10	14	Gain 1-14
Male	1007	442	450	473	490	505	63
	1008	453	461	476	495	511	58
	1009	430	442	455	475	493	63
	1010	403	413	432	447	459	56
	1011	451	464	489	507	527	76
	1012	493	504	529	547	569	76
	Mean	445	456	476	494	511	65
	S.D.	30	30	33	33	37	9
Female	1107	224	241	243	249	257	33
	1108	265	278	287	293	303	38
	1109	246	259	261	272	279	33
	1110	238	257	267	267	269	31
	1111	222	213	221	234	231	9
	1112	238	236	249	262	258	20
	Mean	239	247	255	263	266	27
	S.D.	16	22	23	20	24	11

Unit : g

Appendix 94 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual body weight (Recovery period)

Dose (mg/kg) : 100

Sex	Animal number	Day of recovery 1	3	7	10	14	Gain 1-14
Male	4007	304	308	328	339	352	48
	4008	338	338	349	363	396	58
	4009	245	274	315	344	363	118
	4010	342	342	354	368	380	38
	4011	250	276	316	342	370	120
	4012	314	316	308	312	337	23
	Mean	299	309	328	345	366	68
	S.D.	42	29	19	20	21	42
Female	4107	199	200	212	220	228	29
	4108	185	185	205	226	228	43
	4109	185	189	214	230	235	50
	4110	199	199	204	216	227	28
	4111	201	207	207	212	216	15
	4112	201	201	214	218	230	29
	Mean	195	197	209	220	227	32
	S.D.	8	8	5	7	6	12

Unit : g

Appendix 95 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual food consumption (Administration period)

Dose (mg/kg) : 0

Sex	Animal number	Day of administration 1	7	14	21	28
Male	1001	25	27	29	30	31
	1002	25	29	32	33	33
	1003	24	28	30	28	27
	1004	27	25	24	24	23
	1005	24	26	27	23	24
	1006	26	29	30	30	29
	1007	25	27	28	29	27
	1008	25	26	29	31	30
	1009	25	27	30	29	30
	1010	26	25	24	26	27
	1011	25	27	31	32	30
	1012	27	31	34	33	33
	Mean	25	27	29	29	29
	S.D.	1	2	3	3	3
Female	1101	16	16	17	17	17
	1102	19	19	21	21	20
	1103	18	18	20	21	22
	1104	14	17	16	16	18
	1105	15	17	17	17	18
	1106	21	18	18	17	18
	1107	14	17	18	19	19
	1108	19	18	19	20	21
	1109	20	18	19	20	21
	1110	19	18	18	19	21
	1111	14	17	16	16	16
	1112	16	15	18	18	19
	Mean	17	17	18	18	19
	S.D.	3	1	2	2	2

Unit : g/rat/day

Appendix 96 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual food consumption (Administration period)

Dose (mg/kg) : 4

Sex	Animal number	Day of administration 1	7	14	21	28
Male	2001	25	27	28	28	27
	2002	24	27	27	29	28
	2003	29	30	30	30	32
	2004	25	26	30	32	32
	2005	25	26	28	28	28
	2006	29	32	35	34	35
	Mean	26	28	30	30	30
	S.D.	2	2	3	2	3
Female	2101	17	16	18	18	18
	2102	18	17	18	19	19
	2103	19	20	21	20	20
	2104	16	16	19	19	19
	2105	17	18	19	19	21
	2106	14	18	19	18	20
	Mean	17	18	19	19	20
	S.D.	2	2	1	1	1

Unit : g/rat/day

Appendix 97

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual food consumption (Administration period)

Dose (mg/kg) : 20

Sex	Animal number	Day of administration				
		1	7	14	21	28
Male	3001	25	27	27	25	25
	3002	24	26	29	28	26
	3003	25	25	27	28	26
	3004	28	27	30	29	28
	3005	26	27	30	30	28
	3006	23	26	30	33	33
	Mean	25	26	29	29	28
	S.D.	2	1	1	3	3
Female	3101	18	18	19	21	20
	3102	19	16	17	18	18
	3103	17	17	19	18	19
	3104	16	16	17	17	16
	3105	16	19	17	18	19
	3106	18	19	22	23	23
	Mean	17	18	19	19	19
	S.D.	1	1	2	2	2

Unit : g/rat/day

Appendix 98 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual food consumption (Administration period)

Dose (mg/kg) : 100

Sex	Animal number	Day of administration 1	7	14	21	28
Male	4001	26	23	24	24	21
	4002	23	15	13	10	13
	4003	26	25	28	28	26
	4004	24	23	25	24	22
	4005	23	24	25	23	17
	4006	26	23	25	27	23
	4007	24	20	21	22	19
	4008	29	25	26	23	20
	4009	26	13	9	11	16
	4010	26	22	25	24	25
	4011	26	17	18	8	13
	4012	24	21	24	24	21
	Mean	25	21	22	21	20
	S.D.	2	4	6	7	4
Female	4101	16	17	17	20	22
	4102	21	15	14	14	9
	4103	18	15	16	13	8
	4104	14	13	13	13	9
	4105	17	15	17	15	14
	4106	14	14	9	9	8
	4107	18	17	18	14	13
	4108	17	17	16	17	12
	4109	18	13	15	13	11
	4110	15	17	20	15	13
	4111	15	16	16	17	15
	4112	15	17	16	15	14
	Mean	17	16	16	15	12
	S.D.	2	2	3	3	4

Unit : g/rat/day

Appendix 99 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual food consumption (Recovery period)

Dose (mg/kg) : 0

Sex	Animal number	Day of recovery 7	14
Male	1007	29	28
	1008	30	29
	1009	29	31
	1010	27	26
	1011	31	31
	1012	34	33
	Mean	30	30
	S.D.	2	3
Female	1107	19	19
	1108	23	21
	1109	21	21
	1110	21	19
	1111	15	15
	1112	20	17
	Mean	20	19
	S.D.	3	2

Unit : g/rat/day

Appendix 100 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual food consumption (Recovery period)

Dose (mg/kg) : 100

Sex	Animal number	Day of recovery 7	14
Male	4007	21	22
	4008	21	27
	4009	29	30
	4010	22	28
	4011	29	29
	4012	17	20
	Mean	23	26
	S.D.	5	4
Female	4107	14	19
	4108	13	21
	4109	13	20
	4110	11	17
	4111	17	16
	4112	14	17
	Mean	14	18
	S.D.	2	2

Unit : g/rat/day

Appendix 101 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 4 of administration period)

Dose (mg/kg) : 0

Sex	Animal number	pH	1) Protein	2) Ketone body	3) Glucose	4) Occult blood	5) Bilirubin	6) Urobilinogen	7) Color
Male	1001	8.5	+-	-	-	-	-	+-	Y
	1002	8.5	+-	-	-	-	-	+-	Y
	1003	8.5	-	-	-	-	-	+-	Y
	1004	8.5	+-	+-	-	-	-	+-	Y
	1005	9.0	+-	-	-	-	-	+-	Y
	1006	8.5	+	+	-	-	-	+-	Y
	1007	8.5	+	+	-	-	-	+-	Y
	1008	8.5	-	-	-	+-	-	+-	Y
	1009	8.5	+	+	-	-	-	++	Y
	1010	9.0	+-	+	-	-	-	+	Y
	1011	8.5	+-	+-	-	-	-	+-	Y
	1012	8.5	+	+-	-	-	-	+-	Y
Female	1101	9.0	-	-	-	-	-	+-	Y
	1102	9.0	+-	+-	-	-	-	+-	Y
	1103	8.5	-	-	-	-	-	+-	Y
	1104	8.5	-	-	-	-	-	+-	Y
	1105	9.0	+-	+-	-	-	-	+-	Y
	1106	8.5	+-	+-	-	-	-	+-	Y
	1107	8.5	-	-	-	-	-	+-	Y
	1108	8.0	-	-	-	-	-	+-	Y
	1109	8.5	-	-	-	-	-	+-	Y
	1110	8.5	-	-	-	-	-	+-	Y
	1111	8.5	-	+-	-	-	-	+-	Y
	1112	9.0	+-	+-	-	-	-	+-	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 102

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 4 of administration period)

Dose (mg/kg) : 0

Sex	Animal number	URINE SEDIMENT						
							CRYSTALLIZATION	
		RBC	WBC	SEC	SREC	Cast	PS	CO
Male	1001	-	-	+-	-	-	-	-
	1002	-	-	+-	-	-	-	-
	1003	-	-	+-	-	-	-	-
	1004	-	-	+-	-	-	-	-
	1005	-	-	+-	-	-	-	-
	1006	-	-	+-	-	-	-	-
	1007	-	-	+-	-	-	-	-
	1008	-	-	+-	-	-	-	-
	1009	-	-	+-	-	-	-	-
	1010	-	-	+-	-	-	-	-
	1011	-	-	+-	-	-	-	-
	1012	-	-	+-	-	-	-	-
Female	1101	-	-	+-	-	-	-	-
	1102	-	-	+-	-	-	-	-
	1103	-	-	+-	-	-	-	-
	1104	-	-	+-	-	-	-	-
	1105	-	-	+-	-	-	-	+-
	1106	-	-	+-	-	-	-	+-
	1107	-	-	+-	-	-	-	-
	1108	-	-	+-	-	-	-	-
	1109	-	-	+-	+-	-	-	-
	1110	-	-	+-	-	-	-	-
	1111	-	-	+-	-	-	-	-
	1112	-	-	+-	-	-	-	-

SEC : Squamous Epithelial Cell
SREC : Small Round Epithelial Cell
PS : Phosphate Salts
CO : Calcium Oxalate

\- : Negative
+- : Slight
\+ : Mild
++ : Moderate
+++ : Severe

Appendix 103 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual water intake and urinalysis (Week 4 of administration period)

Dose (mg/kg) : 0

Sex	Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
Male	1001	58	29.6	1090
	1002	47	19.3	1526
	1003	33	14.5	1578
	1004	26	10.7	1976
	1005	29	6.9	2202
	1006	31	9.6	2240
	1007	32	10.0	2142
	1008	35	20.9	1458
	1009	27	6.3	2714
	1010	26	8.5	2206
	1011	44	25.2	1288
	1012	35	13.5	2178
	Mean	35	14.6	1883
	S.D.	10	7.6	483
Female	1101	23	9.7	1814
	1102	27	8.8	1976
	1103	31	14.0	1586
	1104	28	8.2	1956
	1105	24	3.1	2850
	1106	22	3.0	2112
	1107	31	7.9	1560
	1108	19	8.8	2452
	1109	23	12.8	1468
	1110	33	8.1	1834
	1111	25	6.1	2172
	1112	29	8.3	1696
	Mean	26	8.2	1956
	S.D.	4	3.2	399

Appendix 104 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 4 of administration period)

Dose (mg/kg) : 4

Sex	Animal number	pH	1) Protein	2) Ketone body	3) Glucose	4) Occult blood	5) Bilirubin	6) Urobilinogen	7) Color
Male	2001	8.5	+	+	-	-	-	+-	Y
	2002	8.5	+-	-	-	-	-	+-	Y
	2003	8.5	+	+	-	-	-	+-	Y
	2004	8.5	+-	-	-	-	-	+-	Y
	2005	8.5	+	+-	-	-	-	+-	Y
	2006	8.5	+	+	-	-	-	+-	Y
Female	2101	8.5	-	-	-	-	-	+-	Y
	2102	7.0	-	-	-	-	-	+-	Y
	2103	9.0	+-	-	-	-	-	+-	Y
	2104	9.0	+	+-	-	-	-	+-	Y
	2105	8.5	+-	-	-	-	-	+-	Y
	2106	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 105 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 4 of administration period)

Dose (mg/kg) : 4

Sex	Animal number	URINE SEDIMENT						
							CRYSTALLIZATION	
		RBC	WBC	SEC	SREC	Cast	PS	CO
Male	2001	-	-	+-	-	-	-	-
	2002	-	-	+-	-	-	-	-
	2003	-	-	+-	-	-	-	-
	2004	-	-	+-	-	-	-	-
	2005	-	-	+-	-	-	-	-
	2006	-	-	+-	-	-	-	-
Female	2101	-	-	+-	-	-	-	-
	2102	-	-	+-	-	-	-	-
	2103	-	-	+-	-	-	-	-
	2104	-	-	+-	-	-	+-	-
	2105	-	-	+-	-	-	-	+-
	2106	-	-	+-	-	-	-	+-

SEC : Squamous Epithelial Cell
SREC : Small Round Epithelial Cell
PS : Phosphate Salts
CO : Calcium Oxalate

\- : Negative
+- : Slight
\+ : Mild
++ : Moderate
+++ : Severe

Appendix 106 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual water intake and urinalysis (Week 4 of administration period)

Dose (mg/kg) : 4

Sex	Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
Male	2001	38	10.1	1990
	2002	33	10.9	1818
	2003	32	11.3	2202
	2004	37	12.7	2234
	2005	29	8.7	2326
	2006	39	12.9	1840
	Mean	35	11.1	2068
	S.D.	4	1.6	216
Female	2101	25	6.2	2394
	2102	34	7.1	1960
	2103	37	5.6	1660
	2104	34	7.5	1712
	2105	36	2.1	1712
	2106	28	3.1	2208
	Mean	32	5.3	1941
	S.D.	5	2.2	304

Appendix 107 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 4 of administration period)

Dose (mg/kg) : 20

Sex	Animal number	pH	1) Protein	2) Ketone body	3) Glucose	4) Occult blood	5) Bilirubin	6) Urobilinogen	7) Color
Male	3001	8.5	+	+-	-	-	-	+-	Y
	3002	9.0	+	+	-	-	-	+-	Y
	3003	9.0	+-	-	-	-	-	+-	Y
	3004	8.5	+-	-	-	-	-	+-	Y
	3005	8.5	+	+	-	-	-	+	Y
	3006	8.5	+-	-	-	-	-	+-	Y
Female	3101	9.0	-	-	-	-	-	+-	Y
	3102	7.5	-	-	-	-	-	+-	Y
	3103	7.5	-	-	-	-	-	+-	Y
	3104	8.5	-	-	-	-	-	+-	Y
	3105	8.5	+	-	-	+++	-	+-	Y
	3106	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 108

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 4 of administration period)

Dose (mg/kg) : 20

Sex	Animal number	URINE SEDIMENT						
							CRYSTALLIZATION	
		RBC	WBC	SEC	SREC	Cast	PS	CO
Male	3001	-	-	+-	-	-	-	-
	3002	-	-	+-	-	-	-	+-
	3003	-	-	+-	-	-	-	-
	3004	-	-	+-	-	-	-	-
	3005	-	-	+-	+-	-	-	-
	3006	-	-	+-	-	-	-	-
Female	3101	-	-	+-	-	-	-	-
	3102	-	-	+-	-	-	+-	-
	3103	-	-	+-	-	-	-	-
	3104	-	-	+-	-	-	-	-
	3105	++	+-	+-	-	-	-	-
	3106	-	-	+-	-	-	+-	-

SEC : Squamous Epithelial Cell
SREC : Small Round Epithelial Cell
PS : Phosphate Salts
CO : Calcium Oxalate

\- : Negative
+- : Slight
\+ : Mild
++ : Moderate
+++ : Severe

Appendix 109

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual water intake and urinalysis (Week 4 of administration period)

Dose (mg/kg) : 20

Sex	Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
Male	3001	37	14.0	1522
	3002	29	6.3	2432
	3003	32	6.1	1978
	3004	38	12.7	1754
	3005	35	7.9	1860
	3006	45	18.9	1476
	Mean	36	11.0	1837
	S.D.	6	5.1	350
Female	3101	30	11.9	1502
	3102	27	5.9	1762
	3103	34	8.2	1520
	3104	26	6.0	2012
	3105	22	2.9	2238
	3106	36	13.5	1290
	Mean	29	8.1	1721
	S.D.	5	4.0	354

Appendix 110

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 4 of administration period)

Dose (mg/kg) : 100

Sex	Animal number	pH	1) Protein	2) Ketone body	3) Glucose	4) Occult blood	5) Bilirubin	6) Urobilinogen	7) Color
Male	4001	8.0	+-	-	-	-	-	+-	Y
	4002	8.0	+-	-	-	-	-	+-	Y
	4003	8.5	+	-	-	-	-	+-	Y
	4004	7.5	+-	-	-	-	-	+-	Y
	4005	8.5	+	-	-	-	-	+-	Y
	4006	8.5	+	+-	-	-	-	+-	Y
	4007	8.5	+-	-	-	-	-	+-	Y
	4008	8.0	+-	-	-	-	-	+-	Y
	4009	8.5	+-	-	-	-	-	+-	Y
	4010	8.5	+-	-	-	-	-	+-	Y
	4011	7.5	+-	-	-	-	-	+-	Y
	4012	8.0	+	+-	-	-	-	+-	Y
Female	4101	8.0	-	-	-	-	-	+-	Y
	4102	7.0	-	-	-	-	-	+-	Y
	4103	8.5	+-	-	-	-	-	+-	Y
	4104	8.5	-	-	-	-	-	+-	Y
	4105	8.0	-	-	-	-	-	+-	Y
	4106	7.0	-	-	-	-	-	+-	Y
	4107	6.5	+-	+-	-	-	-	+-	Y
	4108	8.5	-	-	-	-	-	+-	Y
	4109	8.0	-	-	-	-	-	+-	Y
	4110	7.5	-	-	-	-	-	+-	Y
	4111	8.0	-	-	-	-	-	+-	Y
	4112	7.0	-	-	-	-	-	+-	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 111 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 4 of administration period)

Dose (mg/kg) : 100

Sex	Animal number	URINE SEDIMENT						
							CRYSTALLIZATION	
		RBC	WBC	SEC	SREC	Cast	PS	CO
Male	4001	-	-	+-	-	-	-	-
	4002	-	-	+-	-	-	-	-
	4003	-	-	+-	-	-	+-	-
	4004	-	-	+-	+-	-	-	-
	4005	-	-	+-	+-	-	-	-
	4006	-	-	+-	-	-	+-	-
	4007	-	-	+-	-	-	-	-
	4008	-	-	+-	+-	-	-	-
	4009	-	-	+-	+-	-	-	-
	4010	-	-	+-	-	-	-	-
	4011	-	-	+-	-	-	-	-
	4012	-	-	+-	-	-	-	-
Female	4101	-	-	+-	+-	-	-	+-
	4102	-	-	+-	-	-	-	-
	4103	-	-	+-	-	-	-	-
	4104	-	-	+-	+-	-	+-	+-
	4105	-	-	+-	-	-	-	-
	4106	-	-	+-	-	-	+-	-
	4107	-	-	+-	-	-	+-	+-
	4108	-	-	+-	-	-	-	-
	4109	-	-	+-	-	-	-	+-
	4110	-	-	+-	-	-	-	-
	4111	-	-	+-	-	-	-	-
	4112	-	-	+-	-	-	-	-

SEC : Squamous Epithelial Cell
SREC : Small Round Epithelial Cell
PS : Phosphate Salts
CO : Calcium Oxalate

\- : Negative
+- : Slight
\+ : Mild
++ : Moderate
+++ : Severe

Appendix 112 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual water intake and urinalysis (Week 4 of administration period)

Dose (mg/kg) : 100

Sex	Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
Male	4001	55	20.6	754
	4002	61	21.0	334
	4003	45	19.9	1264
	4004	64	31.8	746
	4005	65	24.1	472
	4006	59	21.8	574
	4007	46	19.2	644
	4008	73	28.9	500
	4009	72	27.5	382
	4010	58	22.3	680
	4011	86	55.1	198
	4012	63	30.2	558
	Mean	62	26.9	592
	S.D.	11	9.9	270
Female	4101	62	27.7	582
	4102	46	23.5	350
	4103	12	3.2	1530
	4104	42	12.5	552
	4105	45	18.4	652
	4106	45	26.7	320
	4107	91	37.9	262
	4108	40	21.7	632
	4109	104	40.1	178
	4110	54	32.4	418
	4111	35	13.6	956
	4112	100	33.7	282
	Mean	56	24.3	560
	S.D.	28	11.1	375

Appendix 113

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 2 of recovery period)

Dose (mg/kg) : 0

Sex	Animal number	pH	1) Protein	2) Ketone body	3) Glucose	4) Occult blood	5) Bilirubin	6) Urobilinogen	7) Color
Male	1007	8.5	+	+	-	+-	-	+-	Y
	1008	8.5	-	+	-	-	-	+-	Y
	1009	8.5	+	++	-	-	-	++	Y
	1010	9.0	-	+	-	-	-	+-	Y
	1011	8.5	+-	+	-	-	-	+-	Y
	1012	8.5	+-	+	-	-	-	+-	Y
Female	1107	7.5	+-	+-	-	-	-	+-	Y
	1108	8.5	-	+	-	-	-	+-	Y
	1109	5.0	-	-	-	++	-	+-	Y
	1110	6.5	-	-	-	-	-	+-	Y
	1111	8.5	+-	+-	-	-	-	+-	Y
	1112	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 114

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 2 of recovery period)

Dose (mg/kg) : 0

Sex	Animal number	URINE SEDIMENT						
							CRYSTALLIZATION	
		RBC	WBC	SEC	SREC	Cast	PS	CO
Male	1007	-	-	+-	-	-	-	-
	1008	-	-	+-	-	-	-	-
	1009	-	-	+-	-	-	-	-
	1010	-	-	+-	-	-	-	-
	1011	-	-	+-	-	-	+-	-
	1012	-	-	+-	-	-	-	-
Female	1107	-	-	+-	-	-	-	-
	1108	-	-	+-	-	-	-	-
	1109	+-	-	+-	-	-	-	-
	1110	-	-	+-	-	-	-	-
	1111	-	-	+-	-	-	-	-
	1112	-	-	+-	-	-	+-	-

SEC : Squamous Epithelial Cell
SREC : Small Round Epithelial Cell
PS : Phosphate Salts
CO : Calcium Oxalate

\- : Negative
+- : Slight
\+ : Mild
++ : Moderate
+++ : Severe

Appendix 115

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual water intake and urinalysis (Week 2 of recovery period)

Dose (mg/kg) : 0

Sex	Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
Male	1007	33	11.9	2218
	1008	41	17.2	1666
	1009	31	7.1	2636
	1010	30	10.4	1818
	1011	50	18.8	1280
	1012	35	11.3	2480
	Mean	37	12.8	2016
	S.D.	8	4.4	518
Female	1107	29	7.3	1586
	1108	26	4.6	2754
	1109	28	15.0	1436
	1110	33	8.2	2148
	1111	31	6.9	2070
	1112	26	5.1	2674
	Mean	29	7.9	2111
	S.D.	3	3.8	541

Appendix 116 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 2 of recovery period)

Dose (mg/kg) : 100

Sex	Animal number	pH	1) Protein	2) Ketone body	3) Glucose	4) Occult blood	5) Bilirubin	6) Urobilinogen	7) Color
Male	4007	8.5	+-	-	-	-	-	+-	Y
	4008	8.5	-	-	-	-	-	+-	Y
	4009	8.5	-	-	-	-	-	+-	Y
	4010	8.5	+-	-	-	-	-	+-	Y
	4011	8.0	-	-	-	-	-	+-	Y
	4012	9.0	+	+	-	-	-	+-	Y
Female	4107	8.0	-	-	-	-	+	+-	Y
	4108	5.0	-	-	-	-	-	+-	Y
	4109	8.5	-	-	-	-	-	+-	Y
	4110	8.5	-	-	-	-	-	+-	Y
	4111	5.0	-	-	-	++	-	+-	Y
	4112	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 117 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual urinalysis (Week 2 of recovery period)

Dose (mg/kg) : 100

Sex	Animal number	URINE SEDIMENT						
							CRYSTALLIZATION	
		RBC	WBC	SEC	SREC	Cast	PS	CO
Male	4007	-	-	+-	-	-	-	-
	4008	-	-	+-	-	-	-	-
	4009	-	-	+-	+-	-	-	-
	4010	-	-	+-	-	-	-	-
	4011	-	-	+-	+-	-	-	-
	4012	-	-	+-	-	-	-	-
Female	4107	-	-	+-	-	-	-	-
	4108	-	-	+-	+-	-	-	-
	4109	-	-	+-	-	-	-	-
	4110	-	-	+-	-	-	-	-
	4111	-	-	+-	-	-	-	-
	4112	-	-	+-	+-	-	-	-

SEC : Squamous Epithelial Cell
SREC : Small Round Epithelial Cell
PS : Phosphate Salts
CO : Calcium Oxalate

\- : Negative
+- : Slight
\+ : Mild
++ : Moderate
+++ : Severe

Appendix 118

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual water intake and urinalysis (Week 2 of recovery period)

Dose (mg/kg) : 100

Sex	Animal number	Water intake mL/24h	Urine volume mL/24h	Osmolality mOsm/kg
Male	4007	36	10.0	1418
	4008	53	19.3	954
	4009	49	25.4	1054
	4010	37	17.0	1142
	4011	76	48.8	538
	4012	24	10.5	1592
	Mean	46	21.8	1116
	S.D.	18	14.4	369
Female	4107	66	37.5	676
	4108	128	30.9	708
	4109	56	22.1	760
	4110	37	21.9	940
	4111	34	16.0	1108
	4112	47	32.2	614
	Mean	61	26.8	801
	S.D.	35	8.0	187

Appendix 119

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 0

Sex	Animal number	RBC X10⁴/μL	HGB g/dL	HCT %	MCV fL	MCH pg	MCHC g/dL	Reticul. %	PLT X10⁴/μL	PT s	APTT s	FIB mg/dL
Male	1001	818	15.5	43.7	53.5	19.0	35.5	3.2	123.2	13.6	21.0	337
	1002	768	16.0	44.7	58.2	20.9	35.8	2.5	121.4	12.8	20.6	301
	1003	807	15.2	42.3	52.5	18.9	36.0	2.0	124.5	13.7	23.9	292
	1004	827	16.5	48.1	58.2	20.0	34.3	1.8	85.3	15.7	26.4	316
	1005	857	16.2	45.9	53.5	18.9	35.2	1.7	121.7	20.9	30.0	294
	1006	838	16.4	46.5	55.4	19.6	35.4	2.6	161.3	17.3	27.7	288
	Mean	819	16.0	45.2	55.2	19.6	35.4	2.3	122.9	15.7	24.9	305
	S.D.	30	0.5	2.1	2.5	0.8	0.6	0.6	24.1	3.0	3.8	19
Female	1101	814	16.3	45.4	55.7	20.0	35.9	1.9	139.8	11.8	18.0	177
	1102	770	14.9	41.9	54.5	19.4	35.6	2.6	153.2	12.1	16.7	226
	1103	759	15.1	41.3	54.5	19.9	36.5	2.1	163.8	12.0	16.4	256
	1104	785	14.1	39.2	49.9	17.9	35.9	2.0	144.7	11.8	18.2	238
	1105	792	15.0	41.1	51.8	19.0	36.6	2.3	153.1	12.1	16.1	248
	1106	853	15.6	42.9	50.3	18.3	36.3	1.3	147.9	12.2	23.3	219
	Mean	796	15.2	42.0	52.8	19.1	36.1	2.0	150.4	12.0	18.1	227
	S.D.	34	0.7	2.1	2.4	0.9	0.4	0.4	8.3	0.2	2.7	28

Appendix 120 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 0

Sex	Animal number	WBC	Differential leukocyte counts (%)					
		X10²/μL	LYMP	NEUT	EOS	BASO	MONO	LUC
Male	1001	153.2	83.9	12.1	1.0	0.3	1.9	0.8
	1002	97.8	78.4	18.7	0.7	0.4	1.5	0.5
	1003	79.7	77.1	16.4	1.1	0.3	4.4	0.7
	1004	60.7	71.4	25.2	1.0	0.3	1.6	0.5
	1005	76.1	81.1	14.9	0.8	0.5	1.8	0.8
	1006	171.2	75.9	21.1	0.7	0.4	1.3	0.6
	Mean	106.5	78.0	18.1	0.9	0.4	2.1	0.7
	S.D.	45.1	4.3	4.7	0.2	0.1	1.2	0.1
Female	1101	66.9	91.2	6.3	0.6	0.5	1.0	0.5
	1102	84.6	80.5	14.5	1.5	0.3	2.1	1.0
	1103	52.8	81.0	14.7	1.3	0.1	2.0	0.9
	1104	60.6	82.4	14.0	0.7	0.3	1.8	0.8
	1105	53.2	81.3	16.5	0.7	0.3	0.7	0.6
	1106	96.4	74.8	21.1	1.5	0.4	1.4	0.9
	Mean	69.1	81.9	14.5	1.1	0.3	1.5	0.8
	S.D.	17.8	5.3	4.8	0.4	0.1	0.6	0.2

LUC : Large unstained cells

Appendix 121 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 0

Sex	Animal number	Differential leukocyte counts ($X10^2/\mu L$)					
		LYMP	NEUT	EOS	BASO	MONO	LUC
Male	1001	128.5	18.5	1.6	0.5	2.9	1.2
	1002	76.7	18.3	0.7	0.4	1.4	0.4
	1003	61.5	13.1	0.9	0.2	3.5	0.5
	1004	43.4	15.3	0.6	0.2	1.0	0.3
	1005	61.7	11.3	0.6	0.4	1.4	0.6
	1006	129.9	36.1	1.2	0.7	2.2	1.0
	Mean	83.6	18.8	0.9	0.4	2.1	0.7
	S.D.	36.9	9.0	0.4	0.2	1.0	0.4
Female	1101	61.0	4.2	0.4	0.3	0.7	0.3
	1102	68.1	12.3	1.2	0.3	1.8	0.9
	1103	42.8	7.7	0.7	0.1	1.1	0.5
	1104	49.9	8.5	0.4	0.2	1.1	0.5
	1105	43.3	8.8	0.3	0.1	0.4	0.3
	1106	72.1	20.4	1.4	0.3	1.3	0.8
	Mean	56.2	10.3	0.7	0.2	1.1	0.6
	S.D.	12.7	5.6	0.5	0.1	0.5	0.3

LUC : Large unstained cells

Appendix 122 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 4

Sex	Animal number	RBC $\times 10^4/\mu L$	HGB g/dL	HCT %	MCV fL	MCH pg	MCHC g/dL	Reticul. %	PLT $\times 10^4/\mu L$	PT s	APTT s	FIB mg/dL
Male	2001	776	15.5	43.7	56.3	20.0	35.5	2.0	127.4	14.5	22.5	268
	2002	770	15.2	42.0	54.6	19.7	36.1	2.2	121.2	13.5	24.3	277
	2003	789	15.1	43.1	54.6	19.1	35.0	2.3	122.8	13.2	25.4	305
	2004	770	15.2	42.5	55.2	19.7	35.7	3.4	127.5	12.3	20.9	298
	2005	799	16.1	44.7	55.9	20.1	36.0	2.0	128.0	15.9	26.1	344
	2006	801	15.7	44.4	55.4	19.6	35.3	2.3	121.5	13.6	18.3	301
	Mean	784	15.5	43.4	55.3	19.7	35.6	2.4	124.7	13.8	22.9	299
	S.D.	14	0.4	1.1	0.7	0.4	0.4	0.5	3.2	1.2	3.0	26
Female	2101	790	15.2	42.3	53.5	19.2	35.9	2.1	151.6	11.7	21.7	229
	2102	783	15.0	41.7	53.3	19.1	35.8	1.5	135.0	11.4	18.4	191
	2103	793	15.5	42.8	54.0	19.6	36.3	1.6	134.3	12.1	17.3	239
	2104	769	15.0	40.8	53.0	19.4	36.7	1.6	152.1	12.3	20.1	216
	2105	769	15.1	41.6	54.0	19.6	36.3	2.2	133.1	11.1	24.5	261
	2106	721	14.6	40.3	55.9	20.2	36.2	2.7	155.4	12.3	15.2	284
	Mean	771	15.1	41.6	54.0	19.5	36.2	2.0	143.6	11.8	19.5	237
	S.D.	26	0.3	0.9	1.0	0.4	0.3	0.5	10.5	0.5	3.3	33

Appendix 123 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 4

Sex	Animal number	WBC	Differential leukocyte counts (%)					
		$\times 10^3/\mu L$	LYMP	NEUT	EOS	BASO	MONO	LUC
Male	2001	195.5	86.2	10.9	0.6	0.6	1.4	0.4
	2002	85.2	77.5	17.6	0.8	0.4	2.9	0.7
	2003	110.2	80.8	15.2	0.8	0.4	2.3	0.5
	2004	121.5	84.5	11.4	1.3	0.5	1.8	0.5
	2005	109.5	70.7	25.6	0.7	0.2	2.2	0.6
	2006	67.5	70.2	24.7	1.6	0.3	2.9	0.3
	Mean	114.9	78.3	17.6	1.0	0.4	2.3	0.5
	S.D.	44.1	6.8	6.4	0.4	0.1	0.6	0.1
Female	2101	62.7	68.8	27.4	1.4	0.2	1.7	0.5
	2102	98.8	82.3	14.0	1.3	0.3	1.6	0.6
	2103	53.3	71.0	22.5	2.4	0.2	3.2	0.6
	2104	42.0	68.6	26.1	2.3	0.2	2.3	0.5
	2105	88.4	79.6	15.5	1.3	0.3	2.2	1.0
	2106	99.4	74.0	22.7	0.5	0.2	1.5	1.0
	Mean	74.1	74.1	21.4	1.5	0.2	2.1	0.7
	S.D.	24.7	5.8	5.5	0.7	0.1	0.6	0.2

LUC : Large unstained cells

Appendix 124

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 4

Sex	Animal number	Differential leukocyte counts ($X10^2/\mu L$)					
		LYMP	NEUT	EOS	BASO	MONO	LUC
Male	2001	168.5	21.2	1.3	1.1	2.7	0.8
	2002	66.0	15.0	0.7	0.4	2.5	0.6
	2003	89.1	16.7	0.9	0.5	2.5	0.6
	2004	102.7	13.8	1.6	0.6	2.2	0.6
	2005	77.4	28.1	0.8	0.2	2.4	0.6
	2006	47.4	16.7	1.1	0.2	1.9	0.2
	Mean	91.9	18.6	1.1	0.5	2.4	0.6
	S.D.	42.1	5.3	0.3	0.3	0.3	0.2
Female	2101	43.1	17.2	0.8	0.1	1.1	0.3
	2102	81.3	13.8	1.3	0.2	1.6	0.6
	2103	37.8	12.0	1.3	0.1	1.7	0.3
	2104	28.8	11.0	1.0	0.1	1.0	0.2
	2105	70.3	13.7	1.1	0.3	2.0	0.9
	2106	73.6	22.6	0.5	0.2	1.5	1.0
	Mean	55.8	15.1	1.0	0.2	1.5	0.6
	S.D.	21.9	4.3	0.3	0.1	0.4	0.3

LUC : Large unstained cells

Appendix 125

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 20

Sex	Animal number	RBC $\times 10^4/\mu L$	HGB g/dL	HCT %	MCV fL	MCH pg	MCHC g/dL	Reticul. %	PLT $\times 10^4/\mu L$	PT s	APTT s	FIB mg/dL
Male	3001	829	15.9	45.4	54.8	19.1	34.9	2.6	146.8	18.1	29.9	299
	3002	806	16.0	44.9	55.8	19.8	35.6	2.5	142.2	18.7	23.1	328
	3003	814	16.5	46.4	57.0	20.3	35.6	2.2	119.6	18.9	22.8	346
	3004	808	15.6	44.8	55.5	19.3	34.8	2.6	132.0	15.9	39.6	310
	3005	791	15.5	45.2	57.1	19.6	34.3	2.3	127.7	15.1	21.0	321
	3006	773	15.7	45.2	58.5	20.3	34.7	2.8	130.8	13.6	21.9	260
	Mean	804	15.9	45.3	56.5	19.7	35.0	2.5	133.2	16.7	26.4	311
	S.D.	19	0.4	0.6	1.3	0.5	0.5	0.2	9.9	2.2	7.2	30
Female	3101	717	14.5	40.3	56.2	20.2	36.0	2.9	134.3	11.5	15.5	241
	3102	716	14.8	41.1	57.4	20.7	36.0	3.5	137.5	12.2	16.9	211
	3103	734	14.9	41.8	57.0	20.3	35.7	2.4	137.3	11.2	17.3	193
	3104	755	15.1	41.1	54.5	20.0	36.7	1.6	144.3	11.3	19.4	193
	3105	754	14.7	40.9	54.3	19.5	35.9	2.4	144.5	11.2	19.1	272
	3106	794	14.6	41.8	52.7	18.4	34.9	3.8	144.1	11.9	21.1	261
	Mean	745	14.8	41.2	55.4	19.9	35.9	2.8	140.3	11.6	18.2	229
	S.D.	29	0.2	0.6	1.8	0.8	0.6	0.8	4.5	0.4	2.0	34

Appendix 126 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 20

Sex	Animal number	WBC	Differential leukocyte counts (%)					
		$\times 10^2/\mu L$	LYMP	NEUT	EOS	BASO	MONO	LUC
Male	3001	170.8	78.8	17.0	1.1	0.5	2.3	0.4
	3002	187.5	81.0	14.7	1.0	0.4	1.8	1.1
	3003	124.6	80.4	16.1	0.9	0.4	1.8	0.4
	3004	83.0	75.8	19.3	1.1	0.3	2.2	1.3
	3005	85.2	79.4	15.0	1.1	0.4	3.2	0.9
	3006	125.5	80.0	16.4	1.2	0.2	1.6	0.5
	Mean	129.4	79.2	16.4	1.1	0.4	2.2	0.8
	S.D.	43.0	1.8	1.7	0.1	0.1	0.6	0.4
Female	3101	101.0	76.6	18.9	0.7	0.4	2.5	0.8
	3102	66.7	80.9	15.1	0.8	0.3	2.2	0.7
	3103	66.1	79.6	15.5	1.4	0.3	2.1	1.0
	3104	58.9	81.0	13.6	2.1	0.3	2.0	0.9
	3105	66.4	67.0	28.7	1.5	0.2	2.0	0.5
	3106	173.2	83.7	12.9	0.6	0.5	1.4	1.0
	Mean	88.7	78.1	17.5	1.2	0.3	2.0	0.8
	S.D.	44.0	5.9	5.9	0.6	0.1	0.4	0.2

LUC : Large unstained cells

Appendix 127 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 20

Sex	Animal number	Differential leukocyte counts ($X10^3/\mu L$)					
		LYMP	NEUT	EOS	BASO	MONO	LUC
Male	3001	134.5	29.0	1.9	0.8	3.9	0.6
	3002	151.9	27.6	1.8	0.8	3.3	2.1
	3003	100.2	20.0	1.2	0.5	2.2	0.5
	3004	62.9	16.0	0.9	0.3	1.9	1.1
	3005	67.7	12.8	0.9	0.4	2.7	0.8
	3006	100.4	20.5	1.6	0.3	2.0	0.6
	Mean	102.9	21.0	1.4	0.5	2.7	1.0
	S.D.	35.4	6.3	0.4	0.2	0.8	0.6
Female	3101	77.3	19.1	0.7	0.4	2.5	0.8
	3102	54.0	10.1	0.5	0.2	1.5	0.5
	3103	52.6	10.3	0.9	0.2	1.4	0.6
	3104	47.7	8.0	1.2	0.2	1.2	0.5
	3105	44.5	19.1	1.0	0.1	1.3	0.4
	3106	145.0	22.3	1.0	0.8	2.3	1.7
	Mean	70.2	14.8	0.9	0.3	1.7	0.8
	S.D.	38.4	6.0	0.2	0.3	0.6	0.5

LUC : Large unstained cells

Appendix 128

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 100

Sex	Animal number	RBC $\times 10^4/\mu L$	HGB g/dL	HCT %	MCV fL	MCH pg	MCHC g/dL	Reticul. %	PLT $\times 10^4/\mu L$	PT s	APTT s	FIB mg/dL
Male	4001	841	16.6	45.4	54.0	19.7	36.5	1.8	167.2	18.8	25.7	317
	4002	842	16.3	45.1	53.6	19.3	36.1	1.2	137.5	12.5	19.2	324
	4003	862	16.5	47.5	55.1	19.2	34.8	2.0	147.6	16.9	33.1	320
	4004	828	15.8	43.7	52.8	19.0	36.0	1.5	175.4	15.3	25.4	313
	4005	879	17.0	46.8	53.2	19.3	36.3	0.9	159.9	14.8	26.1	328
	4006	837	16.6	45.8	54.7	19.8	36.2	1.5	155.7	14.0	22.6	329
	Mean	848	16.5	45.7	53.9	19.4	36.0	1.5	157.2	15.4	25.4	322
	S.D.	19	0.4	1.3	0.9	0.3	0.6	0.4	13.6	2.2	4.6	6
Female	4101	818	16.0	43.6	53.3	19.5	36.7	2.0	167.7	11.4	22.2	228
	4102	873	16.4	43.8	50.2	18.8	37.5	1.0	161.4	12.7	26.0	234
	4103	812	15.7	41.1	50.6	19.3	38.2	1.0	168.8	12.2	27.0	205
	4104	846	17.1	45.9	54.3	20.2	37.2	1.2	205.1	12.5	27.1	225
	4105	772	14.9	40.7	52.8	19.3	36.5	1.0	170.9	11.4	22.5	225
	4106	895	17.0	44.3	49.5	19.0	38.5	0.9	176.3	12.2	20.3	248
	Mean	836	16.2	43.2	51.8	19.4	37.4	1.2	175.0	12.1	24.2	228
	S.D.	45	0.8	2.0	1.9	0.5	0.8	0.4	15.5	0.6	2.9	14

Appendix 129

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 100

Sex	Animal number	WBC	Differential leukocyte counts (%)					
		X10³/μL	LYMP	NEUT	EOS	BASO	MONO	LUC
Male	4001	88.5	79.3	16.6	1.3	0.2	2.3	0.3
	4002	94.6	78.5	18.0	1.0	0.2	1.6	0.6
	4003	75.0	81.4	15.0	0.8	0.3	1.9	0.6
	4004	118.0	83.2	13.8	0.6	0.4	1.3	0.7
	4005	101.8	85.6	10.0	0.9	0.4	2.2	0.8
	4006	101.7	87.2	8.0	1.0	0.5	2.5	0.7
	Mean	96.6	82.5	13.6	0.9	0.3	2.0	0.6
	S.D.	14.5	3.5	3.9	0.2	0.1	0.5	0.2
Female	4101	41.9	73.8	23.9	0.6	0.4	1.1	0.2
	4102	67.6	85.3	12.8	0.5	0.4	0.6	0.4
	4103	61.5	80.2	16.5	0.4	0.3	2.1	0.4
	4104	60.3	78.4	18.2	0.6	0.3	1.9	0.6
	4105	107.7	83.6	11.8	0.6	0.3	2.3	1.2
	4106	52.9	81.5	14.3	0.2	0.3	2.9	0.7
	Mean	65.3	80.5	16.3	0.5	0.3	1.8	0.6
	S.D.	22.6	4.1	4.4	0.2	0.1	0.8	0.3

LUC : Large unstained cells

Appendix 130 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After administration period)

Dose (mg/kg) : 100

Sex	Animal number	Differential leukocyte counts ($X10^2/\mu L$)					
		LYMP	NEUT	EOS	BASO	MONO	LUC
Male	4001	70.2	14.7	1.1	0.2	2.0	0.3
	4002	74.3	17.0	0.9	0.2	1.5	0.6
	4003	61.0	11.3	0.6	0.3	1.4	0.4
	4004	98.2	16.2	0.7	0.5	1.6	0.8
	4005	87.1	10.2	0.9	0.4	2.2	0.8
	4006	88.7	8.2	1.1	0.5	2.6	0.7
	Mean	79.9	12.9	0.9	0.4	1.9	0.6
	S.D.	13.8	3.5	0.2	0.1	0.5	0.2
Female	4101	30.9	10.0	0.2	0.2	0.4	0.1
	4102	57.7	8.7	0.3	0.3	0.4	0.3
	4103	49.3	10.1	0.2	0.2	1.3	0.3
	4104	47.3	11.0	0.4	0.2	1.2	0.3
	4105	90.1	12.8	0.7	0.4	2.5	1.3
	4106	43.1	7.5	0.1	0.2	1.5	0.4
	Mean	53.1	10.0	0.3	0.3	1.2	0.5
	S.D.	20.2	1.8	0.2	0.1	0.8	0.4

LUC : Large unstained cells

Appendix 131 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After recovery period)

Dose (mg/kg) : 0

Sex	Animal number	RBC $\times 10^4/\mu L$	HGB g/dL	HCT %	MCV fL	MCH pg	MCHC g/dL	Reticul. %	PLT $\times 10^4/\mu L$	PT s	APTT s	FIB mg/dL
Male	1007	821	15.6	44.1	53.7	19.0	35.4	2.7	109.7	15.2	21.9	311
	1008	878	16.2	47.1	53.7	18.4	34.3	1.9	91.9	17.6	25.6	292
	1009	840	15.3	43.2	51.4	18.2	35.4	2.1	115.5	14.4	21.1	286
	1010	823	15.1	42.5	51.6	18.3	35.5	2.3	125.6	13.5	20.7	299
	1011	903	16.0	44.5	49.3	17.7	35.9	2.2	114.1	13.2	17.9	323
	1012	842	15.5	43.5	51.7	18.4	35.5	2.8	110.7	14.0	19.9	310
	Mean	851	15.6	44.2	51.9	18.3	35.3	2.3	111.3	14.7	21.2	304
	S.D.	33	0.4	1.6	1.7	0.4	0.5	0.4	11.0	1.6	2.6	14
Female	1107	818	15.2	41.6	50.8	18.6	36.5	1.6	140.2	11.9	16.6	212
	1108	800	15.2	42.1	52.6	19.0	36.1	2.9	124.7	12.5	18.5	235
	1109	819	15.0	42.2	51.5	18.3	35.5	2.1	120.5	12.4	23.0	219
	1110	783	15.0	41.7	53.3	19.2	36.0	1.8	116.4	12.2	17.8	220
	1111	853	15.6	42.9	50.3	18.3	36.3	1.2	143.9	11.3	13.4	203
	1112	833	15.2	42.8	51.4	18.2	35.4	1.2	109.5	11.5	15.8	220
	Mean	818	15.2	42.2	51.7	18.6	36.0	1.8	125.9	12.0	17.5	218
	S.D.	24	0.2	0.5	1.1	0.4	0.4	0.6	13.6	0.5	3.2	11

Appendix 132 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After recovery period)

Dose (mg/kg) : 0

Sex	Animal number	WBC	Differential leukocyte counts (%)					
		$X10^3/\mu L$	LYMP	NEUT	EOS	BASO	MONO	LUC
Male	1007	138.6	82.5	13.9	0.8	0.4	1.7	0.6
	1008	105.8	80.4	15.2	1.5	0.4	1.7	0.9
	1009	165.4	89.7	7.2	1.0	0.4	1.1	0.6
	1010	101.4	83.6	12.9	0.5	0.5	1.5	1.0
	1011	92.1	80.7	15.4	0.9	0.4	2.0	0.6
	1012	118.9	77.3	17.9	1.6	0.4	2.2	0.6
	Mean	120.4	82.4	13.8	1.1	0.4	1.7	0.7
	S.D.	27.3	4.2	3.6	0.4	0.0	0.4	0.2
Female	1107	52.9	59.0	36.1	1.3	0.3	2.7	0.7
	1108	73.7	63.8	29.6	2.2	0.3	3.0	1.1
	1109	41.7	78.6	16.9	1.2	0.3	2.2	0.9
	1110	44.2	75.1	20.7	1.6	0.2	2.0	0.4
	1111	60.3	82.3	14.0	0.9	0.3	1.2	1.3
	1112	75.2	85.0	10.3	1.0	0.4	2.3	1.1
	Mean	58.0	74.0	21.3	1.4	0.3	2.2	0.9
	S.D.	14.4	10.4	9.8	0.5	0.1	0.6	0.3

LUC : Large unstained cells

Appendix 133 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After recovery period)

Dose (mg/kg) : 0

Sex	Animal number	Differential leukocyte counts ($X10^3/\mu L$)					
		LYMP	NEUT	EOS	BASO	MONO	LUC
Male	1007	114.4	19.3	1.1	0.6	2.4	0.9
	1008	85.0	16.1	1.5	0.4	1.8	0.9
	1009	148.3	11.9	1.6	0.7	1.9	1.0
	1010	84.8	13.0	0.5	0.5	1.5	1.1
	1011	74.3	14.2	0.9	0.4	1.8	0.6
	1012	92.0	21.3	1.9	0.5	2.6	0.7
	Mean	99.8	16.0	1.3	0.5	2.0	0.9
	S.D.	27.3	3.7	0.5	0.1	0.4	0.2
Female	1107	31.2	19.1	0.7	0.1	1.4	0.4
	1108	47.0	21.9	1.6	0.2	2.2	0.8
	1109	32.8	7.0	0.5	0.1	0.9	0.4
	1110	33.2	9.2	0.7	0.1	0.9	0.2
	1111	49.7	8.4	0.5	0.2	0.7	0.8
	1112	63.9	7.7	0.7	0.3	1.7	0.9
	Mean	43.0	12.2	0.8	0.2	1.3	0.6
	S.D.	12.9	6.5	0.4	0.1	0.6	0.3

LUC : Large unstained cells

Appendix 134

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After recovery period)

Dose (mg/kg) : 100

Sex	Animal number	RBC $\times 10^4/\mu L$	HGB g/dL	HCT %	MCV fL	MCH pg	MCHC g/dL	Reticul. %	PLT $\times 10^4/\mu L$	PT s	APTT s	FIB mg/dL
Male	4007	885	15.0	42.5	48.0	16.9	35.2	3.3	127.1	15.7	23.1	285
	4008	866	15.5	43.4	50.1	17.8	35.6	3.7	114.8	14.3	23.0	279
	4009	786	15.0	43.9	55.9	19.1	34.2	4.4	122.2	12.7	18.9	264
	4010	878	15.3	43.5	49.6	17.5	35.2	2.6	123.4	15.3	29.9	248
	4011	810	15.0	42.4	52.3	18.5	35.4	3.6	140.0	14.2	23.2	302
	4012	891	15.5	43.3	48.6	17.4	35.9	2.4	124.4	14.6	21.2	270
	Mean	853	15.2	43.2	50.8	17.9	35.3	3.3	125.3	14.5	23.2	275
	S.D.	44	0.2	0.6	2.9	0.8	0.6	0.7	8.3	1.0	3.7	19
Female	4107	797	15.0	42.1	52.9	18.8	35.6	3.0	123.5	11.2	20.0	215
	4108	788	14.2	39.3	49.9	18.0	36.0	2.4	140.1	11.2	15.9	223
	4109	785	14.6	41.2	52.5	18.6	35.3	3.1	171.6	11.5	16.3	253
	4110	802	14.5	39.8	49.6	18.1	36.6	2.1	150.6	11.9	22.0	211
	4111	801	15.4	42.1	52.5	19.2	36.5	2.2	119.6	12.2	22.7	216
	4112	862	15.9	44.8	52.0	18.4	35.4	3.0	123.8	12.3	17.6	237
	Mean	806	14.9	41.6	51.6	18.5	35.9	2.6	138.2	11.7	19.1	226
	S.D.	28	0.6	2.0	1.4	0.4	0.6	0.5	20.2	0.5	2.9	16

Appendix 135 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After recovery period)

Dose (mg/kg) : 100

Sex	Animal number	WBC	Differential leukocyte counts (%)					
		$\times 10^3/\mu L$	LYMP	NEUT	EOS	BASO	MONO	LUC
Male	4007	114.8	82.3	14.1	0.9	0.4	1.6	0.8
	4008	76.0	78.2	17.6	1.1	0.3	2.5	0.3
	4009	75.9	81.3	14.9	0.6	0.3	2.2	0.7
	4010	124.5	76.4	17.9	1.5	0.4	2.8	1.0
	4011	151.2	69.0	27.2	1.1	0.3	1.8	0.6
	4012	79.9	71.7	24.1	1.2	0.4	1.9	0.6
	Mean	103.7	76.5	19.3	1.1	0.4	2.1	0.7
	S.D.	31.4	5.3	5.2	0.3	0.1	0.5	0.2
Female	4107	55.1	82.7	13.2	0.9	0.4	1.8	1.0
	4108	83.1	63.5	31.1	1.6	0.3	2.5	1.0
	4109	84.8	68.1	25.9	2.7	0.3	2.4	0.7
	4110	57.4	66.9	27.8	1.7	0.2	2.4	1.0
	4111	53.9	83.3	13.4	1.0	0.1	1.4	0.8
	4112	105.3	81.7	15.0	0.7	0.4	1.1	1.0
	Mean	73.3	74.4	21.1	1.4	0.3	1.9	0.9
	S.D.	21.0	9.1	8.1	0.7	0.1	0.6	0.1

LUC : Large unstained cells

Appendix 136 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual hematology (After recovery period)

Dose (mg/kg) : 100

Sex	Animal number	Differential leukocyte counts ($X10^2/\mu L$)					
		LYMP	NEUT	EOS	BASO	MONO	LUC
Male	4007	94.5	16.2	1.0	0.5	1.9	0.9
	4008	59.4	13.4	0.9	0.2	1.9	0.3
	4009	61.8	11.3	0.5	0.2	1.7	0.5
	4010	95.1	22.3	1.9	0.5	3.5	1.2
	4011	104.3	41.2	1.6	0.4	2.7	0.9
	4012	57.3	19.3	0.9	0.3	1.5	0.5
	Mean	78.7	20.6	1.1	0.4	2.2	0.7
	S.D.	21.4	10.8	0.5	0.1	0.8	0.3
Female	4107	45.6	7.3	0.5	0.2	1.0	0.6
	4108	52.7	25.9	1.4	0.2	2.1	0.8
	4109	57.7	21.9	2.3	0.2	2.0	0.6
	4110	38.4	16.0	1.0	0.1	1.4	0.6
	4111	44.9	7.2	0.5	0.1	0.8	0.4
	4112	86.0	15.8	0.8	0.4	1.2	1.1
	Mean	54.2	15.7	1.1	0.2	1.4	0.7
	S.D.	16.9	7.6	0.7	0.1	0.5	0.2

LUC : Large unstained cells

Appendix 137

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After administration period)

Dose (mg/kg) : 0

Sex	Animal number	AST IU/L	ALT IU/L	LDH IU/L	γ-GTP IU/L	ALP IU/L	T-CHO mg/dL	TG mg/dL	PL mg/dL	T-BIL mg/dL	GLU mg/dL
Male	1001	63	30	49	1	763	68	80	112	0.1	133
	1002	57	28	53	1	646	53	52	97	0.1	132
	1003	61	25	48	1	751	38	54	72	0.1	108
	1004	73	28	57	1	1083	50	35	90	0.1	113
	1005	69	27	42	1	742	40	54	76	0.1	120
	1006	56	24	63	1	633	37	42	66	0.1	148
	Mean	63	27	52	1	770	48	53	86	0.1	126
	S.D.	7	2	7	0	163	12	15	17	0.0	15
Female	1101	57	21	39	1	465	58	7	93	0.1	102
	1102	58	21	75	1	289	71	28	124	0.1	119
	1103	64	25	68	2	511	51	17	93	0.1	102
	1104	65	20	35	1	434	48	15	93	0.1	97
	1105	72	16	50	1	375	58	12	99	0.1	98
	1106	69	25	44	1	466	53	12	94	0.1	110
	Mean	64	21	52	1	423	57	15	99	0.1	105
	S.D.	6	3	16	0	80	8	7	12	0.0	8

Appendix 138 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After administration period)

Dose (mg/kg) : 0

Sex	Animal number	BUN mg/dL	CRNN mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	ALB g/dL	A/G
Male	1001	11	0.23	144	4.4	105	9.6	7.4	6.0	3.1	1.07
	1002	14	0.27	145	4.7	107	10.0	7.9	6.0	3.1	1.07
	1003	9	0.23	144	4.4	108	9.4	7.6	5.9	3.0	1.03
	1004	13	0.25	144	4.8	109	9.7	6.9	6.3	3.3	1.10
	1005	16	0.23	143	4.8	107	9.6	7.9	6.1	3.2	1.10
	1006	14	0.21	144	4.8	105	10.2	8.6	6.5	3.1	0.91
	Mean	13	0.24	144	4.7	107	9.8	7.7	6.1	3.1	1.05
	S.D.	2	0.02	1	0.2	2	0.3	0.6	0.2	0.1	0.07
Female	1101	17	0.33	144	4.4	110	9.5	6.7	6.2	3.3	1.14
	1102	18	0.32	142	4.6	108	10.0	7.7	6.2	3.3	1.14
	1103	12	0.23	144	5.0	111	9.7	8.0	6.0	3.0	1.00
	1104	16	0.32	142	4.4	109	9.6	9.5	5.9	3.1	1.11
	1105	20	0.36	142	4.6	109	9.8	7.8	6.1	3.2	1.10
	1106	19	0.30	141	5.3	110	10.1	8.5	6.5	3.3	1.03
	Mean	17	0.31	143	4.7	110	9.8	8.0	6.2	3.2	1.09
	S.D.	3	0.04	1	0.4	1	0.2	0.9	0.2	0.1	0.06

Appendix 139 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After administration period)

Dose (mg/kg) : 4

Sex	Animal number	AST IU/L	ALT IU/L	LDH IU/L	γ-GTP IU/L	ALP IU/L	T-CHO mg/dL	TG mg/dL	PL mg/dL	T-BIL mg/dL	GLU mg/dL
Male	2001	69	27	55	1	753	55	56	95	0.1	138
	2002	62	28	45	1	598	55	99	100	0.1	117
	2003	65	30	48	1	682	42	90	85	0.1	133
	2004	59	27	38	1	596	68	135	121	0.1	110
	2005	49	20	61	1	439	59	75	99	0.1	135
	2006	54	25	49	1	798	56	107	108	0.1	133
	Mean	60	26	49	1	644	56	94	101	0.1	128
	S.D.	7	3	8	0	129	8	27	12	0.0	11
Female	2101	66	19	57	1	291	52	7	98	0.1	105
	2102	73	31	55	1	405	65	17	111	0.1	100
	2103	79	31	52	2	514	80	24	130	0.0	92
	2104	62	26	43	1	386	73	24	133	0.1	106
	2105	59	18	67	1	386	85	17	137	0.1	115
	2106	71	22	50	2	458	73	9	116	0.1	97
	Mean	68	25	54	1	407	71	16	121	0.1	103
	S.D.	7	6	8	1	75	12	7	15	0.0	8

Appendix 140 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After administration period)

Dose (mg/kg) : 4

Sex	Animal number	BUN mg/dL	CRNN mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	ALB g/dL	A/G
Male	2001	11	0.26	144	4.7	105	9.3	7.5	6.0	3.0	1.00
	2002	12	0.28	145	4.5	107	9.6	8.1	5.8	3.0	1.07
	2003	10	0.23	144	4.4	106	9.7	8.2	6.1	3.2	1.10
	2004	13	0.27	145	4.9	106	9.7	7.7	6.0	3.0	1.00
	2005	13	0.22	144	4.9	105	9.7	8.1	6.0	3.0	1.00
	2006	12	0.21	144	4.3	106	10.3	8.8	5.8	3.1	1.15
	Mean	12	0.25	144	4.6	106	9.7	8.1	6.0	3.1	1.05
	S.D.	1	0.03	1	0.3	1	0.3	0.5	0.1	0.1	0.06
Female	2101	16	0.34	143	4.5	110	9.5	6.2	6.5	3.5	1.17
	2102	16	0.27	141	4.8	109	9.7	6.6	6.4	3.3	1.06
	2103	16	0.30	141	4.8	109	10.0	7.0	6.5	3.2	0.97
	2104	14	0.26	141	5.0	109	10.1	6.8	6.2	3.6	1.38
	2105	15	0.35	142	4.6	109	10.1	7.8	6.7	3.4	1.03
	2106	15	0.31	143	4.3	112	9.9	7.1	6.3	3.2	1.03
	Mean	15	0.31	142	4.7	110	9.9	6.9	6.4	3.4	1.11
	S.D.	1	0.04	1	0.3	1	0.2	0.5	0.2	0.2	0.15

Appendix 141

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After administration period)

Dose (mg/kg) : 20

Sex	Animal number	AST IU/L	ALT IU/L	LDH IU/L	γ-GTP IU/L	ALP IU/L	T-CHO mg/dL	TG mg/dL	PL mg/dL	T-BIL mg/dL	GLU mg/dL
Male	3001	65	24	94	1	783	56	80	111	0.1	131
	3002	55	25	61	1	649	44	63	85	0.1	137
	3003	67	34	46	1	1013	48	97	98	0.1	113
	3004	53	20	52	1	514	54	59	104	0.1	151
	3005	63	26	50	1	544	48	64	86	0.1	162
	3006	62	25	55	1	664	46	40	88	0.1	145
	Mean	61	26	60	1	695	49	67	95	0.1	140
	S.D.	6	5	18	0	183	5	19	11	0.0	17
Female	3101	64	24	51	2	669	71	20	111	0.1	113
	3102	56	17	48	1	521	58	22	107	0.1	110
	3103	60	20	43	1	393	71	17	123	0.1	99
	3104	66	26	58	1	248	61	12	100	0.1	89
	3105	62	25	73	1	292	86	16	140	0.1	83
	3106	62	21	42	1	405	73	32	136	0.1	110
	Mean	62	22	53	1	421	70	20	120	0.1	101
	S.D.	3	3	12	0	154	10	7	16	0.0	12

Appendix 142

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After administration period)

Dose (mg/kg) : 20

Sex	Animal number	BUN mg/dL	CRNN mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	ALB g/dL	A/G
Male	3001	11	0.23	143	4.7	105	9.7	7.9	6.3	3.2	1.03
	3002	12	0.22	144	5.3	107	9.6	7.9	6.3	3.2	1.03
	3003	12	0.25	144	4.8	108	9.8	7.8	5.9	3.1	1.11
	3004	11	0.23	144	4.2	105	10.1	8.8	6.5	3.3	1.03
	3005	11	0.22	144	5.1	108	9.9	7.2	6.4	3.1	0.94
	3006	11	0.19	145	5.2	107	10.2	7.8	6.6	3.4	1.06
	Mean	11	0.22	144	4.9	107	9.9	7.9	6.3	3.2	1.03
	S.D.	1	0.02	1	0.4	1	0.2	0.5	0.2	0.1	0.06
Female	3101	12	0.28	143	4.7	110	9.6	6.9	5.6	3.0	1.15
	3102	11	0.24	143	4.4	111	9.7	6.8	6.1	3.3	1.18
	3103	14	0.31	144	4.0	110	10.0	8.3	6.1	3.2	1.10
	3104	12	0.25	142	4.5	110	9.5	7.0	5.9	3.2	1.19
	3105	15	0.29	143	4.7	111	10.0	7.9	6.7	3.2	0.91
	3106	15	0.32	141	4.3	106	9.9	7.8	6.1	3.2	1.10
	Mean	13	0.28	143	4.4	110	9.8	7.5	6.1	3.2	1.11
	S.D.	2	0.03	1	0.3	2	0.2	0.6	0.4	0.1	0.10

Appendix 143

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After administration period)

Dose (mg/kg) : 100

Sex	Animal number	AST IU/L	ALT IU/L	LDH IU/L	γ-GTP IU/L	ALP IU/L	T-CHO mg/dL	TG mg/dL	PL mg/dL	T-BIL mg/dL	GLU mg/dL
Male	4001	70	39	72	1	615	55	34	96	0.1	111
	4002	45	33	51	1	628	84	96	144	0.1	124
	4003	57	22	69	2	565	52	74	110	0.1	117
	4004	63	27	76	1	758	72	76	117	0.1	133
	4005	45	24	91	1	361	98	49	142	0.1	116
	4006	53	24	43	2	419	70	85	119	0.1	118
	Mean	56	28	67	1	558	72	69	121	0.1	120
	S.D.	10	7	17	1	146	17	23	19	0.0	8
Female	4101	47	19	80	1	398	103	31	159	0.1	130
	4102	47	19	61	1	393	76	25	126	0.1	120
	4103	48	17	56	1	362	86	14	124	0.1	110
	4104	46	20	60	2	226	77	20	118	0.1	124
	4105	50	21	68	1	298	100	28	139	0.1	115
	4106	51	25	55	2	332	84	23	114	0.1	82
	Mean	48	20	63	1	335	88	24	130	0.1	114
	S.D.	2	3	9	1	65	11	6	17	0.0	17

Appendix 144 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After administration period)

Dose (mg/kg) : 100

Sex	Animal number	BUN mg/dL	CRNN mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	ALB g/dL	A/G
Male	4001	11	0.27	143	5.0	106	9.7	7.2	6.3	3.3	1.10
	4002	12	0.26	142	4.9	107	10.0	5.9	6.3	3.3	1.10
	4003	11	0.21	144	4.5	107	10.1	7.1	6.7	3.4	1.03
	4004	11	0.30	144	4.8	110	9.8	7.8	6.2	3.1	1.00
	4005	17	0.27	143	4.8	105	10.1	7.5	6.7	3.3	0.97
	4006	11	0.24	143	4.7	104	10.5	7.4	6.7	3.5	1.09
	Mean	12	0.26	143	4.8	107	10.0	7.2	6.5	3.3	1.05
	S.D.	2	0.03	1	0.2	2	0.3	0.7	0.2	0.1	0.06
Female	4101	13	0.24	142	4.5	109	9.7	6.1	6.9	3.5	1.03
	4102	18	0.24	142	4.8	108	9.6	7.2	6.8	3.6	1.13
	4103	16	0.29	141	6.1	107	9.3	8.3	6.0	3.3	1.22
	4104	10	0.23	142	5.0	108	10.0	6.8	6.6	3.7	1.28
	4105	11	0.20	144	4.6	110	9.8	8.0	6.2	3.4	1.21
	4106	15	0.24	143	5.2	110	9.4	6.4	5.7	3.0	1.11
	Mean	14	0.24	142	5.0	109	9.6	7.1	6.4	3.4	1.16
	S.D.	3	0.03	1	0.6	1	0.3	0.9	0.5	0.2	0.09

Appendix 145 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After recovery period)

Dose (mg/kg) : 0

Sex	Animal number	AST IU/L	ALT IU/L	LDH IU/L	γ-GTP IU/L	ALP IU/L	T-CHO mg/dL	TG mg/dL	PL mg/dL	T-BIL mg/dL	GLU mg/dL
Male	1007	57	25	62	1	556	59	41	97	0.1	123
	1008	81	41	72	1	583	51	141	115	0.1	158
	1009	62	25	61	1	446	61	51	95	0.0	142
	1010	70	30	51	1	674	57	53	96	0.1	149
	1011	69	29	64	1	524	103	142	149	0.1	140
	1012	63	25	76	1	403	59	122	108	0.1	147
	Mean	67	29	64	1	531	65	92	110	0.1	143
	S.D.	8	6	9	0	97	19	48	21	0.0	12
Female	1107	61	32	58	1	206	81	45	148	0.1	127
	1108	63	26	44	1	293	58	32	109	0.1	128
	1109	59	20	47	1	209	50	14	93	0.1	129
	1110	60	18	48	1	294	55	9	94	0.1	109
	1111	51	16	35	1	183	56	13	106	0.1	104
	1112	59	22	59	0	200	76	24	139	0.1	133
	Mean	59	22	49	1	231	63	23	115	0.1	122
	S.D.	4	6	9	0	49	13	14	23	0.0	12

Appendix 146

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After recovery period)

Dose (mg/kg) : 0

Sex	Animal number	BUN mg/dL	CRNN mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	ALB g/dL	A/G
Male	1007	11	0.24	143	4.3	103	8.9	6.8	6.4	3.1	0.94
	1008	13	0.27	143	4.2	107	9.3	6.6	6.3	3.4	1.17
	1009	14	0.26	143	4.6	105	9.4	7.3	6.4	3.1	0.94
	1010	13	0.26	145	4.7	106	9.5	7.6	6.1	3.1	1.03
	1011	12	0.25	146	4.7	103	9.7	7.5	6.5	3.2	0.97
	1012	11	0.25	143	4.7	104	9.6	7.1	6.6	3.1	0.89
	Mean	12	0.26	144	4.5	105	9.4	7.2	6.4	3.2	0.99
	S.D.	1	0.01	1	0.2	2	0.3	0.4	0.2	0.1	0.10
Female	1107	15	0.28	143	3.8	108	10.0	6.1	6.8	3.8	1.27
	1108	15	0.27	142	4.4	108	9.7	7.0	6.2	3.3	1.14
	1109	18	0.34	143	3.9	110	9.3	5.9	6.5	3.6	1.24
	1110	18	0.37	143	3.9	110	9.7	6.5	6.6	3.3	1.00
	1111	18	0.32	144	4.1	110	10.0	6.9	6.9	3.8	1.23
	1112	14	0.32	142	4.3	107	10.5	7.5	6.9	3.7	1.16
	Mean	16	0.32	143	4.1	109	9.9	6.7	6.7	3.6	1.17
	S.D.	2	0.04	1	0.2	1	0.4	0.6	0.3	0.2	0.10

Appendix 147

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After recovery period)

Dose (mg/kg) : 100

Sex	Animal number	AST IU/L	ALT IU/L	LDH IU/L	γ-GTP IU/L	ALP IU/L	T-CHO mg/dL	TG mg/dL	PL mg/dL	T-BIL mg/dL	GLU mg/dL
Male	4007	59	27	74	1	508	65	60	102	0.1	128
	4008	53	26	53	2	532	77	46	124	0.1	141
	4009	65	29	51	1	800	65	53	105	0.1	105
	4010	59	25	54	0	472	52	65	95	0.1	125
	4011	71	29	68	1	980	74	44	113	0.1	108
	4012	65	31	65	1	638	76	44	126	0.1	131
	Mean	62	28	61	1	655	68	52	111	0.1	123
	S.D.	6	2	9	1	199	10	9	12	0.0	14
Female	4107	56	20	40	1	320	84	23	146	0.1	123
	4108	62	27	45	1	261	80	25	126	0.1	114
	4109	52	21	44	1	258	86	34	131	0.1	134
	4110	58	18	58	1	234	95	22	149	0.1	97
	4111	52	19	39	1	341	97	27	150	0.1	109
	4112	58	18	51	1	332	81	21	128	0.1	120
	Mean	56	21	46	1	291	87	25	138	0.1	116
	S.D.	4	3	7	0	45	7	5	11	0.0	13

Appendix 148

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual blood chemistry (After recovery period)

Dose (mg/kg) : 100

Sex	Animal number	BUN mg/dL	CRNN mg/dL	Na mmol/L	K mmol/L	Cl mmol/L	Ca mg/dL	P mg/dL	TP g/dL	ALB g/dL	A/G
Male	4007	13	0.31	144	4.8	106	9.1	7.9	6.3	3.1	0.97
	4008	15	0.27	144	5.0	105	9.4	8.0	6.3	3.3	1.10
	4009	12	0.34	144	4.1	107	9.8	8.3	6.1	3.4	1.26
	4010	13	0.25	143	4.7	105	9.6	7.5	6.6	3.4	1.06
	4011	13	0.28	145	5.0	106	9.5	9.4	6.2	3.2	1.07
	4012	13	0.22	143	5.0	104	9.9	8.0	6.6	3.5	1.13
	Mean	13	0.28	144	4.8	106	9.6	8.2	6.4	3.3	1.10
	S.D.	1	0.04	1	0.4	1	0.3	0.6	0.2	0.1	0.10
Female	4107	14	0.31	143	4.1	107	9.6	7.1	6.4	3.2	1.00
	4108	15	0.28	143	4.8	108	9.4	7.3	6.4	3.1	0.94
	4109	18	0.28	143	4.2	106	9.4	8.4	6.0	2.9	0.94
	4110	22	0.37	142	4.2	107	9.4	8.5	6.3	3.3	1.10
	4111	14	0.30	144	4.1	111	9.3	7.6	6.5	3.4	1.10
	4112	15	0.31	142	5.2	106	9.7	8.1	6.3	3.3	1.10
	Mean	16	0.31	143	4.4	108	9.5	7.8	6.3	3.2	1.03
	S.D.	3	0.03	1	0.5	2	0.2	0.6	0.2	0.2	0.08

Appendix 149

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Male

Dose (mg/kg) : 0

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	1001	432	2.07	630	1.46	13.25	1.06	1.39	1.47	2.86
	1002	433	2.10	582	1.46	12.63	0.88	1.51	1.51	3.02
	1003	334	1.98	371	1.05	8.94	0.61	1.19	1.20	2.39
	1004	310	1.98	421	1.14	8.44	0.59	1.16	1.13	2.29
	1005	331	1.98	551	1.16	9.43	0.73	1.25	1.16	2.41
	1006	388	2.09	505	1.35	12.60	0.75	1.67	1.73	3.40
	Mean	371	2.03	510	1.27	10.88	0.77	1.36	1.37	2.73
	S.D.	54	0.06	99	0.18	2.17	0.18	0.20	0.24	0.44
Relative	1001		0.48	146	0.34	3.07	0.25	0.32	0.34	0.66
	1002		0.48	134	0.34	2.92	0.20	0.35	0.35	0.70
	1003		0.59	111	0.31	2.68	0.18	0.36	0.36	0.72
	1004		0.64	136	0.37	2.72	0.19	0.37	0.36	0.74
	1005		0.60	166	0.35	2.85	0.22	0.38	0.35	0.73
	1006		0.54	130	0.35	3.25	0.19	0.43	0.45	0.88
	Mean		0.56	137	0.34	2.92	0.21	0.37	0.37	0.74
	S.D.		0.07	18	0.02	0.22	0.03	0.04	0.04	0.07

Appendix 150

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Male

Dose (mg/kg) : 0

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	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	1001	34	33	67	1.90	1.88	3.78	529	477	1006
	1002	33	34	67	1.91	1.91	3.82	453	464	917
	1003	25	24	49	1.58	1.53	3.11	459	419	878
	1004	34	38	72	1.54	1.52	3.06	366	365	731
	1005	24	26	50	1.71	1.66	3.37	424	415	839
	1006	32	37	69	1.45	1.45	2.90	411	401	812
	Mean	30	32	62	1.68	1.66	3.34	440	424	864
	S.D.	5	6	10	0.19	0.20	0.39	55	41	94
Relative	1001	8	8	16	0.44	0.44	0.88	122	110	233
	1002	8	8	15	0.44	0.44	0.88	105	107	212
	1003	7	7	15	0.47	0.46	0.93	137	125	263
	1004	11	12	23	0.50	0.49	0.99	118	118	236
	1005	7	8	15	0.52	0.50	1.02	128	125	253
	1006	8	10	18	0.37	0.37	0.75	106	103	209
	Mean	8	9	17	0.46	0.45	0.91	119	115	234
	S.D.	1	2	3	0.05	0.05	0.10	12	9	22

Appendix 151 A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Male

Dose (mg/kg) : 4

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	2001	386	1.97	695	1.28	10.29	0.70	1.36	1.32	2.68
	2002	402	2.05	401	1.33	11.53	0.86	1.31	1.31	2.62
	2003	392	2.00	518	1.24	11.92	0.70	1.51	1.49	3.00
	2004	442	2.01	589	1.33	13.34	0.98	1.63	1.61	3.24
	2005	381	1.93	641	1.19	11.58	0.73	1.55	1.54	3.09
	2006	434	1.86	561	1.40	14.42	0.65	1.49	1.64	3.13
	Mean	406	1.97	568	1.30	12.18	0.77	1.48	1.49	2.96
	S.D.	26	0.07	102	0.07	1.47	0.12	0.12	0.14	0.25
Relative	2001		0.51	180	0.33	2.67	0.18	0.35	0.34	0.69
	2002		0.51	100	0.33	2.87	0.21	0.33	0.33	0.65
	2003		0.51	132	0.32	3.04	0.18	0.39	0.38	0.77
	2004		0.45	133	0.30	3.02	0.22	0.37	0.36	0.73
	2005		0.51	168	0.31	3.04	0.19	0.41	0.40	0.81
	2006		0.43	129	0.32	3.32	0.15	0.34	0.38	0.72
	Mean		0.49	140	0.32	2.99	0.19	0.37	0.37	0.73
	S.D.		0.04	29	0.01	0.22	0.02	0.03	0.03	0.06

Appendix 152

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Male

Dose (mg/kg) : 4

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	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	31	34	65	1.74	1.70	3.44	482	440	922
	2002	31	35	66	1.73	1.76	3.49	455	436	891
	2003	29	28	57	1.59	1.62	3.21	439	401	840
	2004	43	41	84	1.77	1.78	3.55	479	481	960
	2005	31	33	64	1.61	1.54	3.15	419	391	810
	2006	39	36	75	1.58	1.62	3.20	395	412	807
	Mean	34	35	69	1.67	1.67	3.34	445	427	872
	S.D.	6	4	10	0.09	0.09	0.17	34	33	63
Relative	2001	8	9	17	0.45	0.44	0.89	125	114	239
	2002	8	9	16	0.43	0.44	0.87	113	108	222
	2003	7	7	15	0.41	0.41	0.82	112	102	214
	2004	10	9	19	0.40	0.40	0.80	108	109	217
	2005	8	9	17	0.42	0.40	0.83	110	103	213
	2006	9	8	17	0.36	0.37	0.74	91	95	186
	Mean	8	9	17	0.41	0.41	0.83	110	105	215
	S.D.	1	1	1	0.03	0.03	0.05	11	7	17

Appendix 153

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Male

Dose (mg/kg) : 20

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	3001	364	2.00	444	1.27	12.07	0.66	1.45	1.41	2.86
	3002	369	2.01	652	1.19	13.10	0.78	1.47	1.40	2.87
	3003	340	1.82	439	1.07	10.09	0.64	1.32	1.31	2.63
	3004	374	2.18	621	1.31	12.29	0.63	1.42	1.37	2.79
	3005	372	2.02	481	1.18	12.34	0.61	1.42	1.42	2.84
	3006	401	2.08	664	1.41	13.44	0.93	1.58	1.51	3.09
	Mean	370	2.02	550	1.24	12.22	0.71	1.44	1.40	2.85
	S.D.	20	0.12	107	0.12	1.17	0.12	0.08	0.07	0.15
Relative	3001		0.55	122	0.35	3.32	0.18	0.40	0.39	0.79
	3002		0.54	177	0.32	3.55	0.21	0.40	0.38	0.78
	3003		0.54	129	0.31	2.97	0.19	0.39	0.39	0.77
	3004		0.58	166	0.35	3.29	0.17	0.38	0.37	0.75
	3005		0.54	129	0.32	3.32	0.16	0.38	0.38	0.76
	3006		0.52	166	0.35	3.35	0.23	0.39	0.38	0.77
	Mean		0.55	148	0.33	3.30	0.19	0.39	0.38	0.77
	S.D.		0.02	24	0.02	0.19	0.03	0.01	0.01	0.01

Appendix 154

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Male

Dose (mg/kg) : 20

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	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	22	24	46	1.53	1.51	3.04	417	405	822
	3002	28	30	58	1.17	1.21	2.38	371	354	725
	3003	21	17	38	1.62	1.60	3.22	421	434	855
	3004	29	32	61	1.41	1.47	2.88	434	423	857
	3005	34	35	69	1.59	1.57	3.16	462	421	883
	3006	39	37	76	1.74	1.70	3.44	457	422	879
	Mean	29	29	58	1.51	1.51	3.02	427	410	837
	S.D.	7	7	14	0.20	0.17	0.36	33	29	59
Relative	3001	6	7	13	0.42	0.41	0.84	115	111	226
	3002	8	8	16	0.32	0.33	0.64	101	96	196
	3003	6	5	11	0.48	0.47	0.95	124	128	251
	3004	8	9	16	0.38	0.39	0.77	116	113	229
	3005	9	9	19	0.43	0.42	0.85	124	113	237
	3006	10	9	19	0.43	0.42	0.86	114	105	219
	Mean	8	8	16	0.41	0.41	0.82	116	111	226
	S.D.	2	2	3	0.05	0.05	0.10	8	11	18

Appendix 155

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Male

Dose (mg/kg) : 100

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	4001	304	2.00	403	0.95	11.15	0.61	1.21	1.17	2.38
	4002	210	1.89	203	0.67	8.64	0.52	1.05	1.04	2.09
	4003	327	1.96	389	1.21	13.46	0.53	1.50	1.43	2.93
	4004	324	1.91	475	0.89	12.76	0.64	1.31	1.29	2.60
	4005	298	1.90	368	0.88	11.66	0.52	1.31	1.26	2.57
	4006	321	1.97	630	0.94	12.47	0.63	1.27	1.35	2.62
	Mean	297	1.94	411	0.92	11.69	0.58	1.28	1.26	2.53
	S.D.	44	0.04	140	0.17	1.70	0.06	0.15	0.14	0.28
Relative	4001		0.66	133	0.31	3.67	0.20	0.40	0.38	0.78
	4002		0.90	97	0.32	4.11	0.25	0.50	0.50	1.00
	4003		0.60	119	0.37	4.12	0.16	0.46	0.44	0.90
	4004		0.59	147	0.27	3.94	0.20	0.40	0.40	0.80
	4005		0.64	123	0.30	3.91	0.17	0.44	0.42	0.86
	4006		0.61	196	0.29	3.88	0.20	0.40	0.42	0.82
	Mean		0.67	136	0.31	3.94	0.20	0.43	0.43	0.86
	S.D.		0.12	34	0.03	0.17	0.03	0.04	0.04	0.08

Appendix 156

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Male

Dose (mg/kg) : 100

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	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	36	33	69	1.71	1.68	3.39	415	393	808
	4002	27	30	57	1.69	1.60	3.29	350	337	687
	4003	33	34	67	1.66	1.59	3.25	500	448	948
	4004	35	38	73	1.42	1.41	2.83	383	379	762
	4005	37	44	81	1.45	1.45	2.90	385	395	780
	4006	31	35	66	1.51	1.50	3.01	367	387	754
	Mean	33	36	69	1.57	1.54	3.11	400	390	790
	S.D.	4	5	8	0.13	0.10	0.23	54	36	87
Relative	4001	12	11	23	0.56	0.55	1.12	137	129	266
	4002	13	14	27	0.80	0.76	1.57	167	160	327
	4003	10	10	20	0.51	0.49	0.99	153	137	290
	4004	11	12	23	0.44	0.44	0.87	118	117	235
	4005	12	15	27	0.49	0.49	0.97	129	133	262
	4006	10	11	21	0.47	0.47	0.94	114	121	235
	Mean	11	12	24	0.55	0.53	1.08	136	133	269
	S.D.	1	2	3	0.13	0.12	0.26	21	15	35

Appendix 157

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Female

Dose (mg/kg) : 0

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	1101	207	1.91	450	0.77	5.47	0.45	0.71	0.68	1.39
	1102	249	1.82	478	0.87	6.99	0.59	0.90	0.91	1.81
	1103	225	1.77	450	0.82	6.11	0.44	0.92	0.87	1.79
	1104	209	1.86	347	0.80	5.76	0.37	0.75	0.71	1.46
	1105	213	1.85	425	0.76	5.55	0.41	0.73	0.70	1.43
	1106	196	1.72	365	0.71	5.19	0.38	0.76	0.74	1.50
	Mean	217	1.82	419	0.79	5.85	0.44	0.80	0.77	1.56
	S.D.	18	0.07	52	0.05	0.64	0.08	0.09	0.10	0.19
Relative	1101		0.92	217	0.37	2.64	0.22	0.34	0.33	0.67
	1102		0.73	192	0.35	2.81	0.24	0.36	0.37	0.73
	1103		0.79	200	0.36	2.72	0.20	0.41	0.39	0.80
	1104		0.89	166	0.38	2.76	0.18	0.36	0.34	0.70
	1105		0.87	200	0.36	2.61	0.19	0.34	0.33	0.67
	1106		0.88	186	0.36	2.65	0.19	0.39	0.38	0.77
	Mean		0.85	194	0.36	2.70	0.20	0.37	0.36	0.72
	S.D.		0.07	17	0.01	0.08	0.02	0.03	0.03	0.05

Appendix 158

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Female

Dose (mg/kg) : 0

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	Ovary (R) mg(mg/100g BW)	Ovary (L) mg(mg/100g BW)	Ovary (R+L) mg(mg/100g BW)	Uterus mg(mg/100g BW)
Absolute	1101	28	31	59	31.9	34.0	65.9	302
	1102	28	34	62	32.3	47.1	79.4	411
	1103	32	35	67	38.5	43.2	81.7	522
	1104	42	43	85	41.4	43.4	84.8	434
	1105	29	33	62	37.2	40.0	77.2	454
	1106	31	37	68	34.7	39.1	73.8	336
	Mean	32	36	67	36.0	41.1	77.1	410
	S.D.	5	4	9	3.7	4.5	6.7	80
Relative	1101	14	15	29	15.4	16.4	31.8	146
	1102	11	14	25	13.0	18.9	31.9	165
	1103	14	16	30	17.1	19.2	36.3	232
	1104	20	21	41	19.8	20.8	40.6	208
	1105	14	15	29	17.5	18.8	36.2	213
	1106	16	19	35	17.7	19.9	37.7	171
	Mean	15	17	32	16.8	19.0	35.8	189
	S.D.	3	3	6	2.3	1.5	3.4	33

Appendix 159

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Female

Dose (mg/kg) : 4

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	2101	217	1.91	355	0.68	5.95	0.48	0.86	0.82	1.68
	2102	215	1.85	417	0.72	6.12	0.39	0.81	0.83	1.64
	2103	226	1.96	568	0.79	6.01	0.49	0.84	0.88	1.72
	2104	222	1.85	344	0.67	5.65	0.37	0.78	0.77	1.55
	2105	241	1.99	557	0.95	7.56	0.47	0.80	0.81	1.61
	2106	233	1.93	377	0.85	6.54	0.57	0.86	0.85	1.71
	Mean	226	1.92	436	0.78	6.31	0.46	0.83	0.83	1.65
	S.D.	10	0.06	101	0.11	0.68	0.07	0.03	0.04	0.06
Relative	2101		0.88	164	0.31	2.74	0.22	0.40	0.38	0.77
	2102		0.86	194	0.33	2.85	0.18	0.38	0.39	0.76
	2103		0.87	251	0.35	2.66	0.22	0.37	0.39	0.76
	2104		0.83	155	0.30	2.55	0.17	0.35	0.35	0.70
	2105		0.83	231	0.39	3.14	0.20	0.33	0.34	0.67
	2106		0.83	162	0.36	2.81	0.24	0.37	0.36	0.73
	Mean		0.85	193	0.34	2.79	0.21	0.37	0.37	0.73
	S.D.		0.02	40	0.03	0.20	0.03	0.02	0.02	0.04

Appendix 160

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Female

Dose (mg/kg) : 4

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	Ovary (R) mg(mg/100g BW)	Ovary (L) mg(mg/100g BW)	Ovary (R+L) mg(mg/100g BW)	Uterus mg(mg/100g BW)
Absolute	2101	32	29	61	39.0	47.1	86.1	484
	2102	33	37	70	36.3	43.4	79.7	369
	2103	34	34	68	36.2	34.3	70.5	353
	2104	24	25	49	31.3	44.2	75.5	389
	2105	43	50	93	45.1	49.4	94.5	443
	2106	34	33	67	41.8	52.2	94.0	663
	Mean	33	35	68	38.3	45.1	83.4	450
	S.D.	6	9	14	4.8	6.2	9.9	115
Relative	2101	15	13	28	18.0	21.7	39.7	223
	2102	15	17	33	16.9	20.2	37.1	172
	2103	15	15	30	16.0	15.2	31.2	156
	2104	11	11	22	14.1	19.9	34.0	175
	2105	18	21	39	18.7	20.5	39.2	184
	2106	15	14	29	17.9	22.4	40.3	285
	Mean	15	15	30	16.9	20.0	36.9	199
	S.D.	2	3	6	1.7	2.5	3.6	48

Appendix 161

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Female

Dose (mg/kg) : 20

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	3101	247	1.93	486	0.85	6.86	0.61	0.95	0.95	1.90
	3102	220	1.83	400	0.70	6.61	0.56	0.90	0.89	1.79
	3103	212	1.78	411	0.72	6.50	0.41	0.85	0.80	1.65
	3104	199	1.76	426	0.79	5.70	0.41	0.82	0.75	1.57
	3105	221	1.89	295	0.81	6.54	0.44	0.86	0.85	1.71
	3106	253	1.90	570	0.94	8.05	0.69	0.98	0.92	1.90
	Mean	225	1.85	431	0.80	6.71	0.52	0.89	0.86	1.75
	S.D.	21	0.07	92	0.09	0.76	0.12	0.06	0.08	0.13
Relative	3101		0.78	197	0.34	2.78	0.25	0.38	0.38	0.77
	3102		0.83	182	0.32	3.00	0.25	0.41	0.40	0.81
	3103		0.84	194	0.34	3.07	0.19	0.40	0.38	0.78
	3104		0.88	214	0.40	2.86	0.21	0.41	0.38	0.79
	3105		0.86	133	0.37	2.96	0.20	0.39	0.38	0.77
	3106		0.75	225	0.37	3.18	0.27	0.39	0.36	0.75
	Mean		0.82	191	0.36	2.98	0.23	0.40	0.38	0.78
	S.D.		0.05	32	0.03	0.14	0.03	0.01	0.01	0.02

Appendix 162

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Female

Dose (mg/kg) : 20

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	Ovary (R) mg(mg/100g BW)	Ovary (L) mg(mg/100g BW)	Ovary (R+L) mg(mg/100g BW)	Uterus mg(mg/100g BW)
Absolute	3101	36	36	72	51.4	36.5	87.9	626
	3102	24	27	51	56.0	43.1	99.1	572
	3103	43	45	88	41.5	54.0	95.5	506
	3104	24	28	52	39.3	41.8	81.1	362
	3105	31	35	66	32.6	39.5	72.1	364
	3106	33	32	65	43.8	42.7	86.5	476
	Mean	32	34	66	44.1	42.9	87.0	484
	S.D.	7	7	14	8.5	6.0	9.8	107
Relative	3101	15	15	29	20.8	14.8	35.6	253
	3102	11	12	23	25.5	19.6	45.0	260
	3103	20	21	42	19.6	25.5	45.0	239
	3104	12	14	26	19.7	21.0	40.8	182
	3105	14	16	30	14.8	17.9	32.6	165
	3106	13	13	26	17.3	16.9	34.2	188
	Mean	14	15	29	19.6	19.3	38.9	215
	S.D.	3	3	7	3.6	3.7	5.5	41

Appendix 163

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Female

Dose (mg/kg) : 100

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	4101	207	1.88	424	0.69	6.87	0.36	0.87	0.89	1.76
	4102	159	1.91	163	0.57	5.33	0.32	0.70	0.71	1.41
	4103	160	1.81	214	0.54	5.19	0.33	0.87	0.84	1.71
	4104	160	1.71	241	0.55	5.38	0.28	0.76	0.76	1.52
	4105	172	1.78	286	0.61	6.44	0.41	0.97	1.03	2.00
	4106	127	1.68	61	0.45	4.68	0.25	0.82	0.82	1.64
	Mean	164	1.80	232	0.57	5.65	0.33	0.83	0.84	1.67
	S.D.	26	0.09	122	0.08	0.83	0.06	0.09	0.11	0.20
Relative	4101		0.91	205	0.33	3.32	0.17	0.42	0.43	0.85
	4102		1.20	103	0.36	3.35	0.20	0.44	0.45	0.89
	4103		1.13	134	0.34	3.24	0.21	0.54	0.53	1.07
	4104		1.07	151	0.34	3.36	0.18	0.48	0.48	0.95
	4105		1.03	166	0.35	3.74	0.24	0.56	0.60	1.16
	4106		1.32	48	0.35	3.69	0.20	0.65	0.65	1.29
	Mean		1.11	135	0.35	3.45	0.20	0.52	0.52	1.04
	S.D.		0.14	54	0.01	0.21	0.02	0.09	0.09	0.17

Appendix 164

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After administration period)

Sex : Female

Dose (mg/kg) : 100

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	Ovary (R) mg(mg/100g BW)	Ovary (L) mg(mg/100g BW)	Ovary (R+L) mg(mg/100g BW)	Uterus mg(mg/100g BW)
Absolute	4101	28	29	57	28.3	31.4	59.7	468
	4102	13	20	33	19.8	25.2	45.0	146
	4103	22	24	46	35.5	26.3	61.8	447
	4104	27	29	56	32.5	30.0	62.5	243
	4105	33	37	70	33.7	31.3	65.0	569
	4106	23	24	47	21.1	19.0	40.1	96
	Mean	24	27	52	28.5	27.2	55.7	328
	S.D.	7	6	13	6.7	4.8	10.4	193
Relative	4101	14	14	28	13.7	15.2	28.8	226
	4102	8	13	21	12.5	15.8	28.3	92
	4103	14	15	29	22.2	16.4	38.6	279
	4104	17	18	35	20.3	18.8	39.1	152
	4105	19	22	41	19.6	18.2	37.8	331
	4106	18	19	37	16.6	15.0	31.6	76
	Mean	15	17	32	17.5	16.6	34.0	193
	S.D.	4	3	7	3.9	1.6	5.0	103

Appendix 165

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After recovery period)

Sex : Male

Dose (mg/kg) : 0

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	1007	476	2.08	770	1.52	12.26	0.72	1.64	1.57	3.21
	1008	474	2.15	641	1.44	13.92	0.76	1.42	1.44	2.86
	1009	463	2.12	624	1.30	14.89	0.86	1.70	1.69	3.39
	1010	438	2.02	576	1.35	11.87	0.69	1.37	1.32	2.69
	1011	493	2.03	512	1.39	13.99	0.84	1.42	1.47	2.89
	1012	537	2.08	676	1.47	15.22	0.89	1.82	1.99	3.81
	Mean	480	2.08	633	1.41	13.69	0.79	1.56	1.58	3.14
	S.D.	33	0.05	88	0.08	1.36	0.08	0.18	0.24	0.41
Relative	1007		0.44	162	0.32	2.58	0.15	0.34	0.33	0.67
	1008		0.45	135	0.30	2.94	0.16	0.30	0.30	0.60
	1009		0.46	135	0.28	3.22	0.19	0.37	0.37	0.73
	1010		0.46	132	0.31	2.71	0.16	0.31	0.30	0.61
	1011		0.41	104	0.28	2.84	0.17	0.29	0.30	0.59
	1012		0.39	126	0.27	2.83	0.17	0.34	0.37	0.71
	Mean		0.44	132	0.29	2.85	0.17	0.33	0.33	0.65
	S.D.		0.03	19	0.02	0.22	0.01	0.03	0.03	0.06

Appendix 166

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After recovery period)

Sex : Male

Dose (mg/kg) : 0

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	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	1007	36	38	74	1.78	1.81	3.59	609	569	1178
	1008	34	33	67	1.79	1.83	3.62	579	561	1140
	1009	33	35	68	1.68	1.70	3.38	602	600	1202
	1010	34	39	73	1.76	1.80	3.56	610	559	1169
	1011	30	37	67	1.82	1.79	3.61	531	519	1050
	1012	48	51	99	1.67	1.61	3.28	584	552	1136
	Mean	36	39	75	1.75	1.76	3.51	586	560	1146
	S.D.	6	6	12	0.06	0.08	0.14	30	26	53
Relative	1007	8	8	16	0.37	0.38	0.75	128	120	247
	1008	7	7	14	0.38	0.39	0.76	122	118	241
	1009	7	8	15	0.36	0.37	0.73	130	130	260
	1010	8	9	17	0.40	0.41	0.81	139	128	267
	1011	6	8	14	0.37	0.36	0.73	108	105	213
	1012	9	9	18	0.31	0.30	0.61	109	103	212
	Mean	8	8	16	0.37	0.37	0.73	123	117	240
	S.D.	1	1	2	0.03	0.04	0.07	12	11	23

Appendix 167

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After recovery period)

Sex : Male

Dose (mg/kg) : 100

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	4007	320	2.02	286	1.05	9.05	0.66	1.13	1.06	2.19
	4008	356	1.93	414	1.07	11.67	0.61	1.42	1.36	2.78
	4009	324	1.83	391	1.05	9.01	0.61	1.11	1.09	2.20
	4010	359	2.08	313	1.14	11.20	0.62	1.49	1.40	2.89
	4011	342	2.12	487	1.09	9.76	0.93	1.38	1.35	2.73
	4012	302	2.00	271	0.97	9.58	0.53	1.33	1.33	2.66
	Mean	334	2.00	360	1.06	10.05	0.66	1.31	1.27	2.58
	S.D.	22	0.10	84	0.06	1.13	0.14	0.16	0.15	0.30
Relative	4007		0.63	89	0.33	2.83	0.21	0.35	0.33	0.68
	4008		0.54	116	0.30	3.28	0.17	0.40	0.38	0.78
	4009		0.56	121	0.32	2.78	0.19	0.34	0.34	0.68
	4010		0.58	87	0.32	3.12	0.17	0.42	0.39	0.81
	4011		0.62	142	0.32	2.85	0.27	0.40	0.39	0.80
	4012		0.66	90	0.32	3.17	0.18	0.44	0.44	0.88
	Mean		0.60	108	0.32	3.01	0.20	0.39	0.38	0.77
	S.D.		0.05	22	0.01	0.21	0.04	0.04	0.04	0.08

Appendix 168

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After recovery period)

Sex : Male

Dose (mg/kg) : 100

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	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	4007	23	23	46	1.71	1.74	3.45	530	526	1056
	4008	29	29	58	1.51	1.60	3.11	484	456	940
	4009	32	31	63	1.51	1.47	2.98	468	437	905
	4010	28	29	57	1.69	1.58	3.27	591	543	1134
	4011	29	32	61	1.71	1.69	3.40	547	531	1078
	4012	30	29	59	1.65	1.56	3.21	532	539	1071
	Mean	29	29	57	1.63	1.61	3.24	525	505	1031
	S.D.	3	3	6	0.10	0.10	0.18	44	46	89
Relative	4007	7	7	14	0.53	0.54	1.08	166	164	330
	4008	8	8	16	0.42	0.45	0.87	136	128	264
	4009	10	10	19	0.47	0.45	0.92	144	135	279
	4010	8	8	16	0.47	0.44	0.91	165	151	316
	4011	8	9	18	0.50	0.49	0.99	160	155	315
	4012	10	10	20	0.55	0.52	1.06	176	178	355
	Mean	9	9	17	0.49	0.48	0.97	158	152	310
	S.D.	1	1	2	0.05	0.04	0.09	15	18	33

Appendix 169

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After recovery period)

Sex : Female

Dose (mg/kg) : 0

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	1107	243	1.85	346	0.82	6.35	0.39	0.76	0.75	1.51
	1108	288	1.99	370	0.79	7.44	0.59	0.96	0.94	1.90
	1109	259	2.08	259	0.91	7.35	0.42	0.90	0.89	1.79
	1110	250	1.97	390	0.87	6.65	0.48	0.85	0.88	1.73
	1111	217	1.84	286	0.77	5.57	0.40	0.75	0.79	1.54
	1112	240	1.85	239	0.80	6.72	0.44	0.80	0.81	1.61
	Mean	250	1.93	315	0.83	6.68	0.45	0.84	0.84	1.68
	S.D.	24	0.10	62	0.05	0.69	0.07	0.08	0.07	0.15
Relative	1107		0.76	142	0.34	2.61	0.16	0.31	0.31	0.62
	1108		0.69	128	0.27	2.58	0.20	0.33	0.33	0.66
	1109		0.80	100	0.35	2.84	0.16	0.35	0.34	0.69
	1110		0.79	156	0.35	2.66	0.19	0.34	0.35	0.69
	1111		0.85	132	0.35	2.57	0.18	0.35	0.36	0.71
	1112		0.77	100	0.33	2.80	0.18	0.33	0.34	0.67
	Mean		0.78	126	0.33	2.68	0.18	0.34	0.34	0.67
	S.D.		0.05	23	0.03	0.12	0.02	0.02	0.02	0.03

Appendix 170

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After recovery period)

Sex : Female

Dose (mg/kg) : 0

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	Ovary (R) mg(mg/100g BW)	Ovary (L) mg(mg/100g BW)	Ovary (R+L) mg(mg/100g BW)	Uterus mg(mg/100g BW)
Absolute	1107	27	28	55	36.6	37.0	73.6	398
	1108	32	34	66	47.6	49.9	97.5	631
	1109	39	45	84	59.9	57.3	117.2	462
	1110	30	34	64	43.0	46.1	89.1	392
	1111	33	32	65	45.5	37.8	83.3	384
	1112	31	33	64	39.0	39.2	78.2	361
	Mean	32	34	66	45.3	44.6	89.8	438
	S.D.	4	6	10	8.2	8.1	15.8	100
Relative	1107	11	12	23	15.1	15.2	30.3	164
	1108	11	12	23	16.5	17.3	33.9	219
	1109	15	17	32	23.1	22.1	45.3	178
	1110	12	14	26	17.2	18.4	35.6	157
	1111	15	15	30	21.0	17.4	38.4	177
	1112	13	14	27	16.3	16.3	32.6	150
	Mean	13	14	27	18.2	17.8	36.0	174
	S.D.	2	2	4	3.1	2.4	5.3	25

Appendix 171

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After recovery period)

Sex : Female

Dose (mg/kg) : 100

	Animal number	Body weight g	Brain g(g/100g BW)	Thymus mg(mg/100g BW)	Heart g(g/100g BW)	Liver g(g/100g BW)	Spleen g(g/100g BW)	Kidney (R) g(g/100g BW)	Kidney (L) g(g/100g BW)	Kidney (R+L) g(g/100g BW)
Absolute	4107	211	1.91	393	0.72	6.36	0.39	0.85	0.79	1.64
	4108	208	1.77	333	0.76	6.62	0.51	1.03	0.93	1.96
	4109	219	1.78	368	0.75	6.72	0.55	0.98	0.93	1.91
	4110	210	1.85	271	0.72	6.02	0.42	0.82	0.81	1.63
	4111	204	1.86	307	0.70	6.02	0.43	0.82	0.82	1.64
	4112	205	1.85	303	0.72	5.97	0.42	0.95	0.95	1.90
	Mean	210	1.84	329	0.73	6.29	0.45	0.91	0.87	1.78
	S.D.	5	0.05	45	0.02	0.33	0.06	0.09	0.07	0.16
Relative	4107		0.91	186	0.34	3.01	0.18	0.40	0.37	0.78
	4108		0.85	160	0.37	3.18	0.25	0.50	0.45	0.94
	4109		0.81	168	0.34	3.07	0.25	0.45	0.42	0.87
	4110		0.88	129	0.34	2.87	0.20	0.39	0.39	0.78
	4111		0.91	150	0.34	2.95	0.21	0.40	0.40	0.80
	4112		0.90	148	0.35	2.91	0.20	0.46	0.46	0.93
	Mean		0.88	157	0.35	3.00	0.22	0.43	0.42	0.85
	S.D.		0.04	19	0.01	0.11	0.03	0.04	0.04	0.07

Appendix 172

A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual absolute and relative organ weight (After recovery period)

Sex : Female

Dose (mg/kg) : 100

	Animal number	Adrenal (R) mg(mg/100g BW)	Adrenal (L) mg(mg/100g BW)	Adrenal (R+L) mg(mg/100g BW)	Ovary (R) mg(mg/100g BW)	Ovary (L) mg(mg/100g BW)	Ovary (R+L) mg(mg/100g BW)	Uterus mg(mg/100g BW)
Absolute	4107	38	41	79	39.7	34.5	74.2	402
	4108	33	34	67	54.8	40.7	95.5	316
	4109	30	32	62	38.2	37.2	75.4	297
	4110	28	28	56	35.1	35.2	70.3	371
	4111	31	36	67	37.1	32.3	69.4	481
	4112	34	35	69	33.1	51.9	85.0	520
	Mean	32	34	67	39.7	38.6	78.3	398
	S.D.	4	4	8	7.8	7.1	10.1	89
Relative	4107	18	19	37	18.8	16.4	35.2	191
	4108	16	16	32	26.3	19.6	45.9	152
	4109	14	15	28	17.4	17.0	34.4	136
	4110	13	13	27	16.7	16.8	33.5	177
	4111	15	18	33	18.2	15.8	34.0	236
	4112	17	17	34	16.1	25.3	41.5	254
	Mean	16	16	32	18.9	18.5	37.4	191
	S.D.	2	2	4	3.7	3.6	5.1	46

Appendix 173(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1001 Male 0 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal
Liver	Vacuolation,hepatocyte,periportal: minimal Microgranuloma: minimal
Thyroid	Ectopic thymus: minimal Remnant,ultimobranchial body: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Parathyroid, Pituitary, Prostate, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Thymus, Trachea
Urinary bladder

Appendix 174(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1002 Male 0 mg/kg Day 29 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, Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Kidney, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Parathyroid, Pituitary, Prostate, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Thymus, Trachea, Thyroid
Urinary bladder

Appendix 175(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1003 Male 0 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal
Prostate	Cell infiltration,interstitial: minimal, lymphocytic ventral

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular, Liver
Lung(bronchus), Parathyroid, Pituitary, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Thymus, Trachea, Thyroid
Urinary bladder

Appendix 176(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1004 Male 0 mg/kg Day 29 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, Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Kidney, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Parathyroid, Pituitary, Prostate, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Thymus, Trachea, Thyroid
Urinary bladder

Appendix 177(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1005 Male 0 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Liver	Microgranuloma: minimal
Prostate	Cell infiltration,interstitial: minimal, lymphocytic ventral

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Kidney, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Parathyroid, Pituitary, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Thymus, Trachea, Thyroid
Urinary bladder

Appendix 178(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1006 Male 0 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal
Liver	Vacuolation,hepatocyte,periportal: minimal
Prostate	Cell infiltration,interstitial: minimal, lymphocytic dorsolateral
Spleen	Hematopoiesis,extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Parathyroid, Pituitary, Sciatic nerve, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Thymus, Trachea, Thyroid
Urinary bladder

Appendix 179(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2001 Male 4 mg/kg Day 29 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, Kidney, Stomach
Thymus, Urinary bladder

Appendix 180(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2002 Male 4 mg/kg Day 29 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, Kidney, Stomach
Thymus, Urinary bladder

Appendix 181(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2003 Male 4 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Mineralization,corticomedullary: minimal
Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 182(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2004 Male 4 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Cell infiltration,interstitial: minimal, lymphocytic
Liver	Vacuolation,hepatocyte,periportal: minimal Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 183(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2005 Male 4 mg/kg Day 29 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, Kidney, Stomach
Thymus, Urinary bladder

Appendix 184(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2006 Male 4 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal
Liver	Vacuolation,hepatocyte,periportal: minimal Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 185(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3001 Male 20 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal Cell infiltration,interstitial: minimal, lymphocytic
Liver	Microgranuloma: minimal Hypertrophy,hepatocytic,central: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 186(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3002 Male 20 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Mineralization,corticomedullary: minimal
Liver	Vacuolation,hepatocyte,periportal: minimal Hypertrophy,hepatocytic,central: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 187(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3003 Male 20 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Liver	Hemorrhage,focal: minimal Microgranuloma: minimal Hypertrophy,hepatocytic,central: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Kidney, Stomach
Thymus, Urinary bladder

Appendix 188(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3004 Male 20 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal
Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 189(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3005 Male 20 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal Cell infiltration,interstitial: minimal, lymphocytic
Liver	Microgranuloma: minimal Hypertrophy,hepatocytic,central: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 190(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3006 Male 20 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Liver	Microgranuloma: minimal Hypertrophy,hepatocytic,central: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Kidney, Stomach
Thymus, Urinary bladder

Appendix 191(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4001 Male 100 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Kidney	Basophilic change,tubular: mild mainly proximal tubule Cell infiltration,interstitial: minimal, lymphocytic Necrosis,single cell,tubular: minimal, proximal
Liver	Vacuolation,hepatocyte,periportal: minimal Hypertrophy,hepatocytic,central: minimal
Spleen	Hematopoiesis,extramedullary: minimal, erythroid

Following tissues : Not remarkable

Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum, Cerebrum
Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Parathyroid, Pituitary, Prostate, Sciatic nerve, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Thymus, Trachea, Thyroid
Urinary bladder

Appendix 192(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4002 Male 100 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Bone+Bone marrow,femoral	Hypocellularity,bone marrow: minimal
Bone+Bone marrow,sternal	Hypocellularity,bone marrow: minimal
Kidney	Basophilic change,tubular: moderate mainly proximal tubule Necrosis,single cell,tubular: minimal, proximal
Liver	Pigmentation,Kupffer cell: minimal Microgranuloma: minimal
Lung(bronchus)	Appearance,alveolar macrophage: minimal
Prostate	Cell infiltration,interstitial: mild, lymphocytic ventral
Spleen	Hematopoiesis,extramedullary: minimal, erythroid
Stomach	Erosion,glandular stomach: minimal, pyloric
Thymus	Atrophy: mild
Urinary bladder	Hypertrophy,umbrella cell: minimal

Following tissues : Not remarkable

Cerebellum, Cerebrum, Epididymis, Eye, Heart, Intestine,duodenum
Intestine,jejunum, Intestine,ileum(Peyer's patch), Intestine,cecum
Intestine,colon, Intestine,rectum, Lymph node,mesenteric
Lymph node,submandibular, Parathyroid, Pituitary, Sciatic nerve
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Trachea, Thyroid

Appendix 193(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4003 Male 100 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal Basophilic change,tubular: minimal mainly proximal tubule Necrosis,single cell,tubular: minimal, proximal
Liver	Hypertrophy,hepatocytic,central: minimal
Thymus	Atrophy: minimal
Urinary bladder	Hypertrophy,umbrella cell: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Parathyroid, Pituitary, Prostate, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Trachea, Thyroid

Appendix 194(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4004 Male 100 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: mild mainly proximal tubule Necrosis,single cell,tubular: minimal, proximal
Liver	Pigmentation,Kupffer cell: minimal Hematopoiesis,extramedullary: minimal Microgranuloma: minimal Necrosis,single cell,hepatocyte: minimal Hypertrophy,hepatocytic,central: minimal
Spleen	Hematopoiesis,extramedullary: minimal, erythroid
Testis	Atrophy,seminiferous tubular: minimal
Thyroid	Remnant,ultimobranchial body: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Parathyroid, Pituitary, Prostate, Sciatic nerve, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Thymus, Trachea, Urinary bladder

Appendix 195(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4005 Male 100 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Kidney	Basophilic change,tubular: moderate mainly proximal tubule Necrosis,single cell,tubular: minimal, proximal
Liver	Microgranuloma: minimal Necrosis,single cell,hepatocyte: minimal Hypertrophy,hepatocytic,central: minimal
Prostate	Cell infiltration,interstitial: minimal, lymphocytic ventral
Stomach	Erosion,glandular stomach: minimal, pyloric
Thymus	Atrophy: minimal
Urinary bladder	Hypertrophy,umbrella cell: minimal

Following tissues : Not remarkable

Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum, Cerebrum
Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Parathyroid, Pituitary, Sciatic nerve, Spleen
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Trachea, Thyroid

Appendix 196(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4006 Male 100 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: mild mainly proximal tubule Necrosis,single cell,tubular: minimal, proximal
Liver	Microgranuloma: minimal Hypertrophy,hepatocytic,central: minimal
Urinary bladder	Hypertrophy,umbrella cell: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Epididymis, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Parathyroid, Pituitary, Prostate, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Testis, Thymus, Trachea, Thyroid

Appendix 197(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1101 Female 0 mg/kg Day 29 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, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Kidney, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Ovary, Parathyroid, Pituitary, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Thymus, Trachea, Thyroid
Urinary bladder, Uterus

Appendix 198(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1102 Female 0 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal
Liver	Vacuolation,hepatocyte,periportal: minimal Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Ovary, Parathyroid, Pituitary, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Thymus, Trachea, Thyroid
Urinary bladder, Uterus

Appendix 199(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1103 Female 0 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Liver	Vacuolation,hepatocyte,periportal: minimal Microgranuloma: minimal
Thyroid	Remnant,ultimobranchial body: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Kidney, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Ovary, Parathyroid, Pituitary, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Thymus, Trachea, Urinary bladder
Uterus

Appendix 200(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1104 Female 0 mg/kg Day 29 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, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Kidney, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Ovary, Parathyroid, Pituitary, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Thymus, Trachea, Thyroid
Urinary bladder, Uterus

Appendix 201(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1105 Female 0 mg/kg Day 29 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, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Kidney, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Ovary, Parathyroid, Pituitary, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Thymus, Trachea, Thyroid
Urinary bladder, Uterus

Appendix 202(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1106 Female 0 mg/kg Day 29 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, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Kidney, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Ovary, Parathyroid, Pituitary, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Thymus, Trachea, Thyroid
Urinary bladder, Uterus

Appendix 203(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2101 Female 4 mg/kg Day 29 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, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 204(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2102 Female 4 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	NEPHROBLASTOMA: 1 present
Liver	Vacuolation,hepatocyte,periportal: mild Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 205(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2103 Female 4 mg/kg Day 29 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, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 206(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2104 Female 4 mg/kg Day 29 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, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 207(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2105 Female 4 mg/kg Day 29 End of administration period

Gross pathology:

All tissues Not remarkable

Histopathology:

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Kidney
Lymph node,mesenteric, Liver, Spleen, Thymus, Urinary bladder, Uterus

Appendix 208(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 2106 Female 4 mg/kg Day 29 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, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 209(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3101 Female 20 mg/kg Day 29 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, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 210(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3102 Female 20 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Cell infiltration,interstitial: minimal, lymphocytic
Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 211(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3103 Female 20 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal
Liver	Vacuolation,hepatocyte,periportal: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 212(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3104 Female 20 mg/kg Day 29 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, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 213(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3105 Female 20 mg/kg Day 29 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, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 214(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 3106 Female 20 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Liver	Vacuolation,hepatocyte,periportal: minimal Microgranuloma: minimal

Following tissues : Not remarkable

Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 215(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4101 Female 100 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: mild mainly proximal tubule Necrosis,single cell,tubular: minimal, proximal
Liver	Vacuolation,hepatocyte,periportal: minimal Hypertrophy,hepatocytic,central: minimal
Parathyroid	No sample
Urinary bladder	Hypertrophy,umbrella cell: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Ovary, Pituitary, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Thymus, Trachea, Thyroid, Uterus

Appendix 216(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4102 Female 100 mg/kg Day 29 End of administration period

Gross pathology:

General descriptions	Unkempt fur
Uterus	Small: mild
Other tissues	Not remarkable

Histopathology:

Bone+Bone marrow,femoral	Hypocellularity,bone marrow: minimal
Bone+Bone marrow,sternal	Hypocellularity,bone marrow: minimal
Kidney	Regeneration,tubular: minimal Basophilic change,tubular: moderate mainly proximal tubule Necrosis,single cell,tubular: minimal, proximal
Lymph node,mesenteric	Atrophy: minimal
Liver	Microgranuloma: minimal Hypertrophy,hepatocytic,central: minimal
Spleen	Atrophy,lymphoid: minimal
Thymus	Atrophy: minimal
Thyroid	Ectopic thymus: minimal
Urinary bladder	Hypertrophy,umbrella cell: minimal
Uterus	Atrophy: mild

Following tissues : Not remarkable

Adrenal, Cerebellum, Cerebrum, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,submandibular, Lung(bronchus), Ovary, Parathyroid
Pituitary, Sciatic nerve, Stomach, Skeletal muscle,femoral, Spinal cord,thoracic
Trachea

Appendix 217(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4103 Female 100 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: moderate mainly proximal tubule Necrosis,single cell,tubular: minimal, proximal
Lymph node,mesenteric	Atrophy: minimal
Liver	Microgranuloma: minimal Hypertrophy,hepatocytic,central: minimal
Thymus	Atrophy: minimal
Thyroid	Remnant,ultimobranchial body: minimal
Urinary bladder	Hypertrophy,umbrella cell: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,submandibular, Lung(bronchus), Ovary, Parathyroid
Pituitary, Sciatic nerve, Spleen, Stomach, Skeletal muscle,femoral
Spinal cord,thoracic, Trachea, Uterus

Appendix 218(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4104 Female 100 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Kidney	Basophilic change,tubular: moderate mainly proximal tubule Necrosis,single cell,tubular: minimal, proximal
Liver	Hypertrophy,hepatocytic,central: minimal
Thymus	Atrophy: minimal
Urinary bladder	Hypertrophy,umbrella cell: minimal

Following tissues : Not remarkable

Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum, Cerebrum, Eye
Heart, Intestine,duodenum, Intestine,jejunum, Intestine,ileum(Peyer's patch)
Intestine,cecum, Intestine,colon, Intestine,rectum, Lymph node,mesenteric
Lymph node,submandibular, Lung(bronchus), Ovary, Parathyroid, Pituitary
Sciatic nerve, Spleen, Stomach, Skeletal muscle,femoral, Spinal cord,thoracic
Trachea, Thyroid, Uterus

Appendix 219(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4105 Female 100 mg/kg Day 29 End of administration period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Dilatation,tubular: minimal, focal Regeneration,tubular: minimal Basophilic change,tubular: moderate mainly proximal tubule Cell infiltration,interstitial: minimal, lymphocytic Necrosis,single cell,tubular: minimal, proximal
Liver	Hypertrophy,hepatocytic,central: minimal
Thyroid	Remnant,ultimobranchial body: minimal
Urinary bladder	Hypertrophy,umbrella cell: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Cerebellum
Cerebrum, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,mesenteric, Lymph node,submandibular
Lung(bronchus), Ovary, Parathyroid, Pituitary, Sciatic nerve, Spleen, Stomach
Skeletal muscle,femoral, Spinal cord,thoracic, Thymus, Trachea, Uterus

Appendix 220(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4106 Female 100 mg/kg Day 29 End of administration period

Gross pathology:

General descriptions	Unkempt fur Undernourishment
Uterus	Small: mild
Other tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Bone+Bone marrow,femoral	Hypocellularity,bone marrow: mild
Bone+Bone marrow,sternal	Hypocellularity,bone marrow: minimal
Kidney	Basophilic change,tubular: moderate mainly proximal tubule Necrosis,single cell,tubular: minimal, proximal
Lymph node,mesenteric	Atrophy: minimal
Liver	Pigmentation,Kupffer cell: minimal Necrosis,single cell,hepatocyte: minimal Hypertrophy,hepatocytic,central: minimal
Spleen	Atrophy,lymphoid: minimal
Thymus	Atrophy: moderate
Thyroid	Remnant,ultimobranchial body: minimal
Urinary bladder	Hypertrophy,umbrella cell: minimal
Uterus	Atrophy: mild

Following tissues : Not remarkable

Cerebellum, Cerebrum, Eye, Heart, Intestine,duodenum, Intestine,jejunum
Intestine,ileum(Peyer's patch), Intestine,cecum, Intestine,colon
Intestine,rectum, Lymph node,submandibular, Lung(bronchus), Ovary, Parathyroid
Pituitary, Sciatic nerve, Stomach, Skeletal muscle,femoral, Spinal cord,thoracic
Trachea

Appendix 221(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1007 Male 0 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Cell infiltration,interstitial: minimal, lymphocytic

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Liver, Stomach
Thymus, Urinary bladder

Appendix 222(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1008 Male 0 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Kidney, Liver
Stomach, Thymus, Urinary bladder

Appendix 223(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1009 Male 0 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Regeneration,tubular: minimal Cell infiltration,interstitial: minimal, lymphocytic
Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 224(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1010 Male 0 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Kidney	Regeneration,tubular: minimal
Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 225(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1011 Male 0 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues Not remarkable

Histopathology:

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Kidney, Liver
Stomach, Thymus, Urinary bladder

Appendix 226(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1012 Male 0 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Kidney, Stomach
Thymus, Urinary bladder

Appendix 227(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4007 Male 100 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Kidney	Basophilic change,tubular: minimal mainly proximal tubule Cell infiltration,interstitial: minimal, lymphocytic
Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 228(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4008 Male 100 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Kidney	Regeneration,tubular: minimal Basophilic change,tubular: minimal mainly proximal tubule Cell infiltration,interstitial: minimal, lymphocytic
Liver	Pigmentation,Kupffer cell: minimal Microgranuloma: minimal Hypertrophy,hepatocytic,central: minimal

Following tissues : Not remarkable

Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 229(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4009 Male 100 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: mild mainly proximal tubule
Liver	Pigmentation,Kupffer cell: minimal Hypertrophy,hepatocytic,central: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 230(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4010 Male 100 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: minimal mainly proximal tubule Cell infiltration,interstitial: minimal, lymphocytic
Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 231(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4011 Male 100 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Kidney	Basophilic change,tubular: mild mainly proximal tubule
Liver	Pigmentation,Kupffer cell: minimal Hematopoiesis,extramedullary: minimal Microgranuloma: minimal

Following tissues : Not remarkable

Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 232(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4012 Male 100 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: minimal mainly proximal tubule
Liver	Pigmentation,Kupffer cell: minimal Microgranuloma: minimal Hypertrophy,hepatocytic,central: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Stomach, Thymus
Urinary bladder

Appendix 233(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1107 Female 0 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Mineralization,corticomedullary: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal
Lymph node,mesenteric, Liver, Spleen, Thymus, Urinary bladder, Uterus

Appendix 234(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1108 Female 0 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Liver	Vacuolation,hepatocyte,periportal: mild Microgranuloma: minimal
Spleen	Hematopoiesis,extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Kidney
Lymph node,mesenteric, Thymus, Urinary bladder, Uterus

Appendix 235(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1109 Female 0 mg/kg Day 43 End of recovery 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, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 236(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1110 Female 0 mg/kg Day 43 End of recovery 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, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 237(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1111 Female 0 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 238(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 1112 Female 0 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Kidney
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 239(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4107 Female 100 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: minimal mainly proximal tubule

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal
Lymph node,mesenteric, Liver, Spleen, Thymus, Urinary bladder, Uterus

Appendix 240(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4108 Female 100 mg/kg Day 43 End of recovery period

Gross pathology:

Kidney	Dilatation,pelvic: moderate, bilateral right: moderate left: mild
Other tissues	Not remarkable

Histopathology:

Kidney	Dilatation,pelvic: moderate, bilateral Regeneration,tubular: mild, focal, unilateral Basophilic change,tubular: minimal, bilateral mainly proximal tubule
Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 241(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4109 Female 100 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: minimal mainly proximal tubule
Liver	Hematopoiesis,extramedullary: minimal Microgranuloma: minimal
Spleen	Hematopoiesis,extramedullary: minimal, erythroid

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal
Lymph node,mesenteric, Thymus, Urinary bladder, Uterus

Appendix 242(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4110 Female 100 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Adrenal	Hypertrophy,glomerular,diffuse: minimal
Kidney	Basophilic change,tubular: minimal mainly proximal tubule
Liver	Microgranuloma: minimal Hypertrophy,hepatocytic,central: minimal

Following tissues : Not remarkable

Bone+Bone marrow,femoral, Bone+Bone marrow,sternal, Lymph node,mesenteric
Spleen, Thymus, Urinary bladder, Uterus

Appendix 243(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4111 Female 100 mg/kg Day 43 End of recovery period

Gross pathology:

All tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: minimal mainly proximal tubule
Liver	Microgranuloma: minimal

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal
Lymph node,mesenteric, Spleen, Thymus, Urinary bladder, Uterus

Appendix 244(1/1) A 28-day oral toxicity study of Acenaphthylene in rats with a recovery period of 2 weeks

Individual gross and histopathological findings

Animal No. 4112 Female 100 mg/kg Day 43 End of recovery period

Gross pathology:

Thyroid	Small: mild, left
Other tissues	Not remarkable

Histopathology:

Kidney	Basophilic change,tubular: mild mainly proximal tubule
Thyroid	Ectopic thymus: minimal Remnant,ultimobranchial body: minimal No finding correlating with small in gross findings

Following tissues : Not remarkable

Adrenal, Bone+Bone marrow,femoral, Bone+Bone marrow,sternal
Lymph node,mesenteric, Liver, Spleen, Thymus, Urinary bladder, Uterus

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信頼性保証書（1/3）

試験番号　：　B-6582

試験表題　：　アセナフチレンのラットを用いた
2週間回復性観察を含む28日間反復経口投与毒性試験

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、
環保企発第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。

2010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 [redacted]

試験における調査

調　査　項　目	調査担当者	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	[redacted]	2009年　6月　24日	2009年　6月　24日
作業予定表・コンピュータプロトコール		2009年　6月　29日	2009年　6月　30日
改善確認		2009年　7月　1日	2009年　7月　2日

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信頼性保証書（2/3）

調　査　項　目	調査担当者	調　査　日	試験責任者及び運営管理者への報告日
調製・被験物質の保存	[redacted]	2009年　7月　6日	2009年　7月　7日
被験液の濃度・均一性確認		2009年　7月　6日	2009年　7月　7日
群分け		2009年　7月　7日	2009年　7月　8日
体重・摂餌量測定・投与・一般状態の観察		2009年　7月　9日	2009年　7月　9日
詳細な一般状態の観察		2009年　7月　14日	2009年　7月　15日
尿検査（尿量・色調・定性）		2009年　7月　31日	2009年　8月　1日
摂水量測定		2009年　8月　1日	2009年　8月　3日
機能検査・握力及び自発運動量測定		2009年　8月　3日	2009年　8月　4日
採血・剖検		2009年　8月　6日	2009年　8月　7日
病理組織学検査（切り出し）		2009年　8月　10日	2009年　8月　11日
中間報告書		2009年　9月　10日	2009年　9月　11日
改善確認		2009年　9月　14日	2009年　9月　15日
最終報告書草案・図・表・付表		2009年　12月　10日	
		2009年　12月　11日	
		2009年　12月　12日	
		2009年　12月　14日	2009年　12月　15日
改善確認		2009年　12月　17日	2009年　12月　18日
生データ		2010年　6月　2日	
		2010年　6月　3日	
		2010年　6月　4日	2010年　6月　7日
改善確認		2010年　6月　9日	2010年　6月　9日
最終報告書		2010年　6月　17日	2010年　6月　17日

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信頼性保証書（3/3）

プロセス調査

調　査　項　目	調査担当者	調　査　日	部門責任者及び運営管理者への報告日
動物入荷	[redacted]	2009年　6月　1日	2009年　6月　2日
検疫・馴化		2009年　6月　1日	2009年　6月　2日
		2009年　6月　6日	2009年　6月　8日
飼育管理		2009年　6月　8日	
		2009年　6月　16日	2009年　6月　17日
尿検査（沈査・浸透圧）		2009年　9月　4日	2009年　9月　7日
		2009年　9月　5日	2009年　9月　7日
血液学検査・血液化学検査		2009年　9月　7日	2009年　9月　8日
病理組織学検査		2009年　9月　9日	2009年　9月　9日
（包埋・薄切・染色）		2009年　9月　11日	2009年　9月　14日
		2009年　9月　15日	2009年　9月　16日