Battelle
. . . Putting Technology To Work

Pacific Northwest National Laboratory
Operated by Battelle for the U.S. Department of Energy

Center for Biological Monitoring and Modeling

AMENDED REPORT

June 10, 2003

Pharmacokinetics of 1,1,2-Trichloroethane in Rats and Mice

Battelle Project No. 41608

T.S. Poet[1], T.L. Curry[2], T.M. Luders[2], H. Wu[1], K.G. Studniski[2], K.K. Weitz[1], and R. A. Corley[1]

[1] Center for Biological Monitoring and Modeling
[2]Small Animal Sciences group
Biosciences Department
902 Battelle Boulevard
P.O. Box 999, MSIN P7-59
Richland, WA 99352

FOR

Dr. Michael L. Gargas, Representing the HAP Task Force

The Sapphire Group
2661 Commons Blvd, First Floor
Beavercreek, OH 45431

Corresponding Author:
Torka S. Poet, Ph.D.
ph: 509-376-7740
fax: 509-376-9064
e-mail: torka.poet@pnl.gov

Amendments to October 18, 2001 Final Report:

1. Addresses and contact information for authors
2. Page 19. Figure 4 – 0.5 and 1 hr time points for day 5 data corrected as indicated in Table B-2 (Page 46)
3. Page 38. Table A-1, Day of study is 3
4. Page 38. Table A-1, Day of study is 5
5. Page 40-43. Tables A-2 and A-3, Sampling times changed from target to actual
6. Page 46. Table B-2, Day 3 TCE average corrected for 0.51 hr time point to 9.675 µg/g and for 1.01 hr time point to 6.343 µg/g

Battelle
. . . Putting Technology To Work

Pacific Northwest National Laboratory
Operated by Battelle for the U.S. Department of Energy

Chemical Dosimetry Group

FINAL REPORT

Battelle Project No. 41608

October 18, 2001

Pharmacokinetics of 1,1,2-Trichloroethane in Rats and Mice

Battelle Project No. 41608

T.S. Poet[1], T.L. Curry[2], T.M. Luders[2], H. Wu[1], K.G. Studniski[2], K.K. Weitz[1], and R. A. Corley[1]

[1]Chemical Dosimetry
[2]Small Animal Sciences group
Molecular Biosciences Department
902 Battelle Boulevard
P.O. Box 999, MSIN P7-59
Richland, WA 99352

FOR

Dr. Michael L. Gargas, Representing the HAP Task Force

The Sapphire Group
4027 Col. Glenn Hwy
4th Floor
Beavercreek, OH 45431

Corresponding Author:
Torka S. Poet, Ph.D.
ph: 509-376-7740
fax: 509-376-9064
e-mail: torka.poet@pnl.gov

ABSTRACT

This report summarizes the pharmacokinetic analyses of 1,1,2-trichloroethane in female F344 rats and B6C3F1 mice. Studies were conducted in support of PBPK modeling efforts by The Sapphire Group. In-life studies were conducted at either WIL Laboratories or at Battelle. Blood samples from the subchronic inhalation studies performed at WIL Laboratories were sent to Battelle, Pacific Northwest Division for analysis. In mice, maximal blood concentrations after 4 weeks of inhalation exposure to target concentrations of 100 ppm were approximately 2.1 µg/ml. In rats, maximal measured blood concentrations following the 4 week inhalation studies were approximately 2.2 µg/ml. All other studies described in this report were conducted at Battelle, Pacific Northwest Division. Female rats and mice were gavaged with 1,1,2-TCE in corn oil at target doses of 92 or 390 mg/kg/day for 5 days, respectively, or in water at target doses of 1.7 or 10 mg/kg/day, respectively. Following exposures to the higher concentrations in corn oil, in mice the lowest blood levels were observed at day one and in rats, the highest blood levels were obtained on day one. This observation is consistent with results from the inhalation exposures conducted at WIL Laboratories. The off-gassing of 1,1,2-TCE was followed using an MS/MS real-time breath analysis system following inhalation exposures of female mice to 1000, 500, or 250 ppm for 4 to 6 hr. Overt toxicity was observed during 1000 ppm exposures. Following exposures all 5 exposed animals were placed in a 2.2 L off-gassing chamber, maximal chamber concentrations were approximately 6 and 17 ppm for mice exposed to 250 or 500 ppm, respectively. In addition, partition coefficients were measured in mouse blood and rat brain and spleen. Partition coefficients for 1,1,2-TCE for mouse blood:air, rat spleen:air, and rat brain:air were 71, 43, and 56, respectively.

This report was submitted in fulfillment of Agreement No.41608, by Battelle Memorial Institute. This report covers a period from December, 2000 to August, 2001 and work was completed as of July, 2001.

INTRODUCTION

1,1,2-Trichloroethane (1,1,2-TCE) is used as an intermediate in the production of vinylidene chloride, as a solvent, in adhesives and lacquers, and in the production of Teflon®. In long-term carcinogenicity studies, 1,1,2-TCE administered by gavage resulted in hepatic carcinomas and adrenal gland tumors in both male and female B6C3F1 mice. No incidences of neoplasms were detected in Osborn Mendel rats (NTP, 1978). Under section 4 of the Toxic Substances Control Act (TSCA), the USEPA issued a testing consent order incorporating an enforceable consent agreement with the HAP Task Force to perform toxicity testing and mechanistic and pharmacokinetic studies to satisfy EPA's data needs for 1,1,2-TCE (Federal Register 65(116), June 15, 2000, Notices, pp37550-37553). A PBPK model will be used to perform route-to-route, high-to-low dose, and species-to-species extrapolations in the characterization of certain potential health hazards resulting from inhalation exposures based upon toxicity studies in rats and mice.

Purpose of study. Studies described herein were designed to support the development and validation of a physiologically based pharmacokinetic (PBPK) model for 1,1,2-TCE under development by The Sapphire Group. The information in this report is restricted to kinetic and solubility data that may be better interpreted following the PBPK modeling efforts. Therefore, this report is meant to principally describe the concentration data with little discussion or interpretation of results. This report describes the blood concentration results from kinetic studies conducted at either Battelle, or WIL Laboratories. Oral gavage kinetic studies in female B6C3F1 mice and female F344 rats using either a corn oil or water vehicle, partition coefficient determinations, and inhalation studies were conducted by the Chemical Dosimetry Group at Battelle Northwest. A subchronic inhalation study was conducted by WIL Laboratories (Ashland, Ohio), and samples collected at times on days 1, 3, and 5 of the 4^{th} week. The partition coefficient determinations and the single inhalation studies were performed to determine tissue solubility and to provide data that will be used to

estimate metabolic rate constants for the mouse PBPK model. In all, 5 separate studies were conducted and are described:

Study 1. Demonstration of Periodicity Following Repeated Inhalation Exposures. (exposures conducted at WIL Research Laboratories)

Study 2. Demonstration of Periodicity Following Repeated Corn Oil Oral Gavage Administrations.

Study 3. Demonstration of Periodicity Following Repeated Aqueous Oral Gavage Administrations.

Study 4. Determination of Metabolic Parameters.

Study 5. Determination of Partition Coefficients.

MATERIALS AND METHODS

Test Materials and Chemicals. 1,1,2-Trichloroethane was obtained from Dow Chemical Co. (Midland, MI). Test material was 99.5% pure as reported by the supplier. All other compounds and solvents were reagent grade or better.

Test Animals. For studies conducted at Battelle (studies #2-5), adult (8 week old) female F344 rats or B6C3F1 mice were purchased from Charles River Laboratories, Raleigh, NC. The animals were housed in suspended plastic cages with chipped bedding and acclimated to the laboratory for at least 5 days prior to dosing with 1,1,2-TCE. The rooms in which the animals were housed were on a 12-hr light cycle (7 am – 7 pm) and designed to maintain adequate temperatures, relative humidity, and airflows for the species under study. Deionized water (reverse osmosis) and Purina Certified Rodent Chow #5002 (Purina Mills, Inc., St. Louis, MO) were provided *ad libitum*. During the acclimation period, animals were uniquely marked with a tail tattoo, weighed, and randomly assigned to subgroups based upon targeted sacrifice times. Animal weights were recorded on each day of exposure.

Blood Analysis. Samples of heparinized whole blood were analyzed for 1,1,2-TCE by headspace gas chromatography. Chloroform was used as an internal standard. Blood was collected from control (untreated) female rats or mice and standard curves were generated in a blood matrix. The standard curve was linear up to 58.9 µg/ml and the limit of detection was 0.01 µg/ml. Aliquots of each blood sample (~0.1g) were added to a 20ml headspace vial. The 20 ml headspace vials were incubated in a 100^{o}C oven for 5 minutes before GC analysis.

GC/ECD analyses were performed on a Hewlett Packard 6890 Series gas chromatograph equipped with an electron capture detector (ECD). Separations were achieved with a J&W (cat.#125-1334) DB-624 fused silica capillary column (30 m x 0.53 mmid, 3 um film thickness; J&W, Folsom, CA). Injections were splitless using a 4 mmid Carbo-Frit liner.

Study 1. Demonstration of Periodicity Following Repeated Inhalation Exposures.

Study Design. Under a separate contract, WIL Laboratories conducted a subchronic inhalation study with 1,1,2-TCE in rats and mice, which included subgroups of animals for pharmacokinetic determinations. Groups of 3 female F344 rats or 3 female B6C3F1 mice per sample time (36 animals/species) were sacrificed and blood collected by WIL laboratories at target times of 4, 6, 6.25 and 8 hr after the start of the 6-hr exposures to a target concentration of 100 ppm TCE on exposures days 1, 3 and 5 of the 4th week of the study. On day 1, target exposure time and blood sample collection were all delayed 1 hr such that target times were 5, 7, 7.25, and 9 hr. Aliquots of 100 µl of blood were placed in headspace vials which were tightly sealed and the weight of the blood recorded. Analyses were limited to the determination of 1,1,2-TCE in blood samples under this statement of work. However, other tissue samples (brain, lung, liver, spleen and kidney) were collected and stored frozen for potential future analyses. Travel and storage quality control spikes containing known amounts of 1,1,2-TCE in

each sample matrix were prepared by WIL Laboratories to be included in the analysis. Individual animal blood 1,1,2-TCE exposure conditions and concentration data are given in Appendix A.

Study 2 and 3. Demonstration of Periodicity Following Repeated Oral Gavage Administrations in either Corn Oil or Water.

Study Design. A total of 4 gavage studies were conducted. Group 1 mice (animal #s M001-M038) were administered 1,1,2-TCE for 1 to 5 days by gavage at a target dose of 390 mg/kg/day in corn oil. Group 2 mice (animal #s M101-M138) were administered 1,1,2-TCE for 1 to 5 days by gavage at a target dose of 9.5 mg/kg/day in water. Group 1 rats (animal #s R001-R038) were administered 1,1,2-TCE for 1 to 5 days by gavage at a target dose of 92 mg/kg/day in corn oil. Group 2 rats (animal #s R101-R138) were administered 1,1,2-TCE for 1 to 5 days by gavage at target dose of 1.7 mg/kg/day in water. Two extra animals/study were administered 1,1,2-TCE as potential replacements in the event that any problems were encountered during dosing or sacrifice.

Dose Solutions and Administration. Corn oil solutions of 1,1,2-TCE were prepared late on the Friday for administration on the following Monday, and stored at -80°C. Aliquots of dosing solution were stored for GC concentration check analysis. For the 390 mg/kg/day target dose (mice), a target concentration of 39 mg/ml was prepared. For the 92 mg/ml/day dose (rats), a target concentration of 46 mg/ml was prepared. These target doses were chosen to match the highest dose administered in the NTP chronic bioassay (NTP, 1978).

Due to the low solubility of 1,1,2-TCE, water target concentrations were less than 1 mg/ml. The stated water solubility for 1,1,2-TCE is 0.45%, a solubility check confirmed this as the maximum, but in repeated checks of homogeneity, it was determined that 1 mg/ml was the maximum concentration of 1,1,2-TCE that was consistently homogenous.

Samples of each dose solution were taken for analysis on the day of dosing to confirm targeted concentrations. Each mouse was weighed and administered dose solutions by gavage at a rate of ~10 ml/kg body weight to achieve the targeted dose levels. Each rat was weighed and administered dose solutions by gavage at a rate of ~2 ml/kg body weight to achieve the target dose levels. The dosing syringe was weighed before and after dosing to determine the actual volume delivered to each animal.

Specimen Collection. Scheduled sacrifice times were 0.5, 1, 2, and 8 hr for the corn oil gavage studies and 0.1, 0.25, 0.5, and 1 hr for the water gavage studies. At each scheduled sacrifice time, animals were anesthetized in an 80% CO_2 atmosphere and blood samples were collected by closed-chest cardiac puncture. To avoid volatilization loss of 1,1,2-TCE, blood samples were quickly aliquoted into duplicate samples of 100 µl each into headspace vials which were immediately sealed. The headspace vials were weighed and immediately frozen on dry ice. In some cases for mice, only a single 100 µl sample was available. Any remaining blood was placed into chilled heparinized Vacutainers® in the event that additional sample might be needed. The time of death was recorded at blood draw and all animals were rapidly dissected to remove, trim extraneous tissues, and weigh the kidneys, spleen, liver, lung, and brain. The time at which the final tissue (brain) was removed was also recorded. The tissues were flash-frozen and stored along with the blood samples at –80°C.

Study 4. Determination of Metabolic Parameters.

Study Design. To provide data to be used in the PBPK model to determine metabolic rate constants, five female B6C3F1 mice were exposed by whole-body inhalation for 4 to 6 hr to three separate exposure concentrations (1000, 500, and 250 ppm). Immediately following exposure, all 5 mice were placed in an off-gassing chamber and 1,1,2-TCE measured by direct sampling of the chamber air using an ion trap mass spectrometer (MS/MS)

V*apor Generation System*. High purity breathing air was regulated through a Kin-Tek Laboratories 670-C Precision Gas Standards Generator at a flow rate of approximately 2.0 L/min. The standard generator was loaded with three 15 ml diffusion tubes filled at

half capacity with 1,1,2-TCE. The exposure atmosphere was delivered through a stainless steel circular tube located at the bottom of the glass exposure chamber. Chamber pressurization was avoided by using an unobstructed ¾" exhaust port located on the top chamber lid. Target concentrations were obtained by varying the diffusion cell temperature.

Whole Body Exposure Chamber. A dynamic flow-through inhalation chamber was designed to allow for rapid changeover between the closed, recirculating chamber and a dynamic, flow-through operation. Each mouse was weighed and 5 animals were exposed to target concentrations of either 250, 500 or 1000 ppm 1,1,2-TCE for up to 6 hr in an 8.59-L glass and stainless steel closed inhalation chamber. After the completion of each exposure, the animals were placed in off-gassing system described below.

Chamber Monitoring. Exposure concentrations of 1,1,2-TCE were determined by gas chromatographic analysis of atmosphere from the exposure chamber using a Hewlett Packard 5890 Series II capillary gas chromatograph with flame ionization detection (GC/FID; Hewlett Packard, Palo Alto, CA). A 30 m x 0.32 mm ID DB-624 with 3 µm film thickness capillary column was used to separate each test chemical from the air (J&W Scientific, Folsom, CA). The chemical concentration during each exposure was monitored approximately every 8 min via automatic injections of ~1 mL of chamber air through a Valco gas sampling valve. The GC/FID was calibrated with a standard curve consisting of 6 standards prepared in 3-L Tedlar® bags (SKC, Fullerton, CA) prior to each exposure.

Off-Gassing. Immediately following the inhalation exposures, all 5 mice were placed in a 2.2 L off-gassing chamber. Breathing air was continually supplied to the mice through the lid of the off-gassing chamber at a measured rate (179-183 ml/min). Airflow rates were measured using flow meters from Sierra Instruments (Carmel Valley, CA) and were calibrated prior to use. A Teledyne Discovery II MS/MS equipped with an atmospheric sampling glow discharge ionization (ASGDI) source sampled from the off-gassing chamber (representing exhalation from the animal) approximately every 5-sec for up to 9 hr following the inhalation exposure. The ASGDI source derived reagent ions

directly from the volatile chemicals in the sampled air. An electric potential was established by applying 400 V between two plates. Ions were then focused onto the MS/MS trap. Helium was used as a buffer and collision gas. The intensity data from the MS/MS was converted to concentration (ppb) through the use of external standards prepared in Tedlar® bags. A standard curve was generated each day of experimentation 1,1,2-TCE was quantified by selective ion monitoring of the m-1 (m/z 83) and m+1 (m/z 85) ions of the daughter produced.

Study 5. Determination of Partition Coefficients.

Liquid:air and tissue:air partition coefficients were determined for mouse blood and rat brain and spleen using the vial equilibration technique of Gargas *et al.* (1989). Tissues were obtained from 5 individual rats and 6 individual mice, and blood was pooled from 4 additional mice. Tissues were collected from the rats, rinsed in phosphate buffered saline, and homogenized in 3 x v/w PBS. Blood was collected in heparinized syringes. 1.0 ml of tissue homogenate was incubated with shaking for 1 hr and the headspace sampled for 1,1,2-TCE. Due to the low volume of mouse blood obtained, 0.5 ml of whole blood was incubated for 1 hr. Headspace 1,1,2-TCE concentrations were compared to vials containing 1,1,2-TCE vapor only for blood or vials containing 0.75 ml saline for the tissues. A pilot study with rat blood was used to verify that 1 hr incubations with 0.5 ml of blood were sufficient to reach steady state.

RESULTS

Study 1. Demonstration of Periodicity Following Repeated Inhalation Exposures.

Samples of blood (~100 µl) from inhalation studies in rats and mice were supplied by WIL Laboratories in headspace vials with recorded gravimetric weights. In addition, WIL Laboratories provided control blood for the generation of standard curves and storage

spikes with known quantities of 1,1,2-TCE. The 1,1,2-TCE concentrations in the storage spikes were quantified using GC headspace analysis. To calculate the expected concentrations, the supplied gravimetric data was used for volumes of blood and spiking solution added and the stock solution concentration as analyzed using GC headspace analysis. Recoveries of 1,1,2-TCE in storage spikes averaged 98.2 and 99.9% for mouse and rat blood, respectively, verifying that the sample collection, shipping, and storage methods for this study were adequate (Table 1).

Blood concentrations in female B6C3F1 mice on days 1, 3, and 5 of week 4 were analyzed using GC headspace methods. The blood concentrations during and after the inhalation exposures show the typical uptake and elimination profile for this type of exposure (Fig 1). For mice, the blood concentration peaked at the 6 hr target timepoint on day 5 at 2.2 $\pm$ 0.37 µg/g blood. The peak concentration achieved in rat blood on day 1 at the 7 hr target timepoint was 2.3 $\pm$ 0.35 µg/g blood.

Study 2 and 3. Demonstration of Periodicity Following Repeated Oral Gavage Administrations in either Corn Oil or Water.

1,1,2-TCE was administered to female B6C3F1 mice or rats in either a corn oil vehicle or water vehicle. Due to the limited solubility of 1,1,2-TCE in water, the target doses in water were 10 mg/kg for mice and 1.7 mg/kg in rats. Animals were sacrificed at times following administration on days 1, 3, or 5 of the 5 day dosing schedule and blood and tissues collected. Blood was analyzed for 1,1,2-TCE concentrations. Individual animal body weight, sacrifice time, dose administered, and blood 1,1,2-TCE concentration data are given in Appendix B.

Dose Solutions and Administration. Actual concentrations of 1,1,2-TCE in the dose solutions were within 10% of target by gravimetric and GC/ECD analyses and were considered homogeneous (Tables 2 and 3). The final GC/ECD analyzed concentrations were used in determinations of actual doses of 1,1,2-TCE in subsequent analyses.

The dosing syringes were weighed immediately prior to and immediately after dosing and the actual volume dosed determined gravimetrically. The density of corn oil (0.92

g/ml) was included in the dosing concentration calculations. The average actual time of sacrifice, body weights, and 1,1,2-TCE concentrations administered on the day of sacrifice are given in Tables 4-7 for animals administered 1,1,2-TCE by gavage either in corn oil or water. Body weights were determined immediately before dosing on each day. The daily body weights of the animals from the group administered 1,1,2-TCE for all 5 days are shown in Figure 2.

Blood Concentrations following Corn Oil Gavage. In mice, the peak blood concentration after corn oil gavage was observed at day 5 at the first timepoint, 0.5 hr following dosing. The blood concentrations from day 1 dropped more rapidly than on days 3 and 5 of dosing (Fig. 3). In rats, peak blood concentrations were observed at the first timepoint on day 1 of dosing (Fig. 4).

Blood Concentrations following Water Gavage. In both rats and mice, peak 1,1,2-TCE blood concentrations were observed at the first timepoint (6 min) on the first day of dosing following administration of 1,1,2-TCE in a water vehicle (Fig. 5 and 6).

Terminal Body and Tissue Weights. Lungs, liver, kidneys, spleen and brain were collected from each animal immediately after blood collection upon sacrifice. Tissue weights are given in Appendix C.

Study 4. Determination of Metabolic Parameters.

Preliminary gavage study. A preliminary study was conducted to determine the utility of the real time MS/MS breath analysis system to detect 1,1,2-TCE in mice following a gavage exposure. For the preliminary study, 5 mice weighing from 22-24 g were gavaged with 26.6 mg/kg 1,1,2-TCE in a corn oil vehicle and placed in the 2.2-L off-gassing chamber. Dosing and animal weight information is given in Table 8. It took an average of 10 minutes following dosing to begin off-gassing analysis. Chamber air was monitored for 3.5 hr post dosing, peak exhaled 1,1,2-TCE concentrations were achieved by 30 min and were no longer detectable by 1.5 hr post-dosing (Fig 7).

Inhalation Exposures. Female B6C3F1 mice were exposed to 1,1,2-TCE by inhalation at concentrations of 250, 500, or 1000 ppm for 4 to 6 hr (Fig. 8). Immediately after the exposure, all 5 animals were placed in an off-gassing chamber and chamber 1,1,2-TCE concentrations monitored for up to 9 hr. The exposure to 1000 ppm resulted in extreme lethargy. About 4 hr post exposure 1 animal died, at 6 hr post-exposure all remaining animals were still lethargic or unconscious. The exhaled breath profile from these animals was not typical (Fig 9). Body weights, exposure and off-gassing conditions, and comments are given in Appendix D.

Due to indications of developing solvent-type anesthesia, the exposure to 500 ppm was stopped after 4 hr. In the subchronic inhalation studies conducted by Wil Laboratories, equilibrium was reached by 4 hr. Animals showed no overt effects following 250 ppm exposures for 6 hr. Exhaled breath profiles are shown in Fig 9.

Study 5. Determination of Partition Coefficients.

A pilot study using frozen blood from male F344 rats was performed to assess the length of incubation time and validate the use of less than 1 ml of blood. Results and volumes are given in Appendix E. Based on the results from this study, incubations containing 0.5 ml of female B6C3F1 mouse blood or 1 ml of female F344 rat tissue were

carried out for 1 hr. Tissue:air partition coefficients are shown in Table 9. Individual incubation data are given in Appendix E.

DISCUSSION

Target corn oil gavage doses of 390 mg/kg/day in mice and 92 mg/kg/day in rats were chosen based on the high dose from the NTP chronic bioassay (NTP, 1978). The doses for the gavage exposures in water were based on limit of solubility. Blood elimination profiles indicate that periodicity was reached over 5 consecutive days of dosing. This is consistent with blood analysis from rats and mice exposed via inhalation for 4 weeks.

The 4-6 hr inhalation exposures indicated a more pronounced effect of 1,1,2-TCE in mice than expected. Exposure to the highest concentration (1000 ppm) resulted in severe sedation and mortality in one animal, thus the off-gassing data from this high concentration is not viable for use in a pharmacokinetic study. No anesthesia or adverse affects were observed during or following exposures to 250 ppm.

Based on a comparison of partition coefficients, 1,1,2-TCE may be slightly more soluble in blood from female B6C3F1 mice than from male F344 rats. Partition coefficients in female F344 rat brain and spleen were 56 and 43, respectively.

Reference List

Gargas, M.L., Burgess, R.J., Voisard, D.E., Cason, G.H. and Andersen, M.E. (1989). Partition coefficients of low-molecular weight volatile chemicsl in various liquids and tissues. *Toxicol. Appl. Pharmacol.* **98,** 87-99.

Gargas, M. L. (1990). An exhaled breath chamber system for assessing rates of metabolism and rates of gastrointestinal absorption with volatile compounds. Journal of the American College of Toxicology **9**, 447-453.

NTP. 1,1,2-Trichloroethane: bioassay for possible carcinogenicity. 074. 1978. National Toxicology Program.

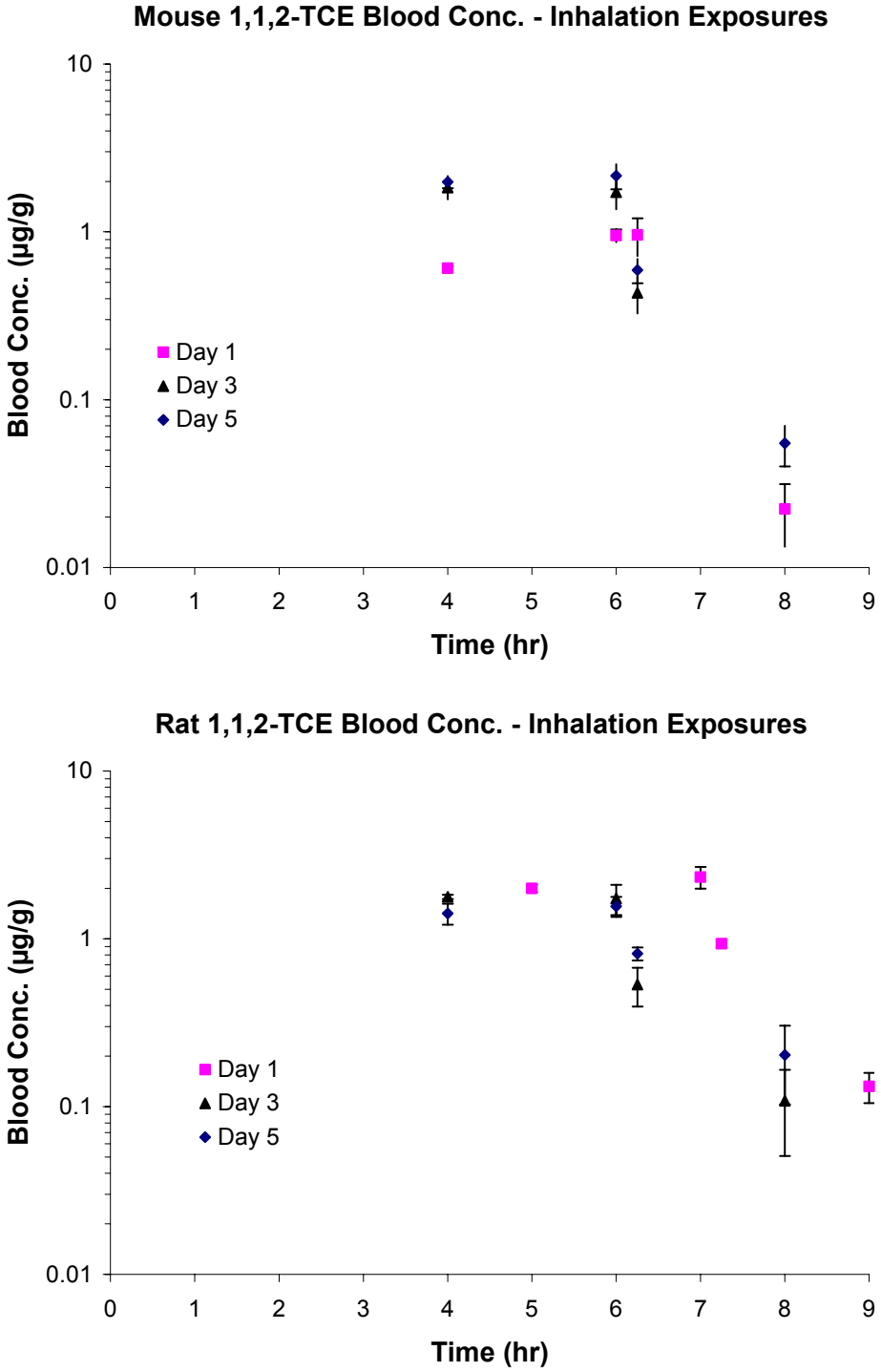

Figure 1. Blood 1,1,2-TCE Concentrations in female B6C3F1 Mice (top) and F344 Rats (bottom) following inhalation exposures. Female rats and mice were exposed to target concentrations of 100 ppm 1,1,2-TCE for 6-hr /day for 4 weeks. Blood was collected on exposure days 1, 3 and 5 of the 4th week of the study.

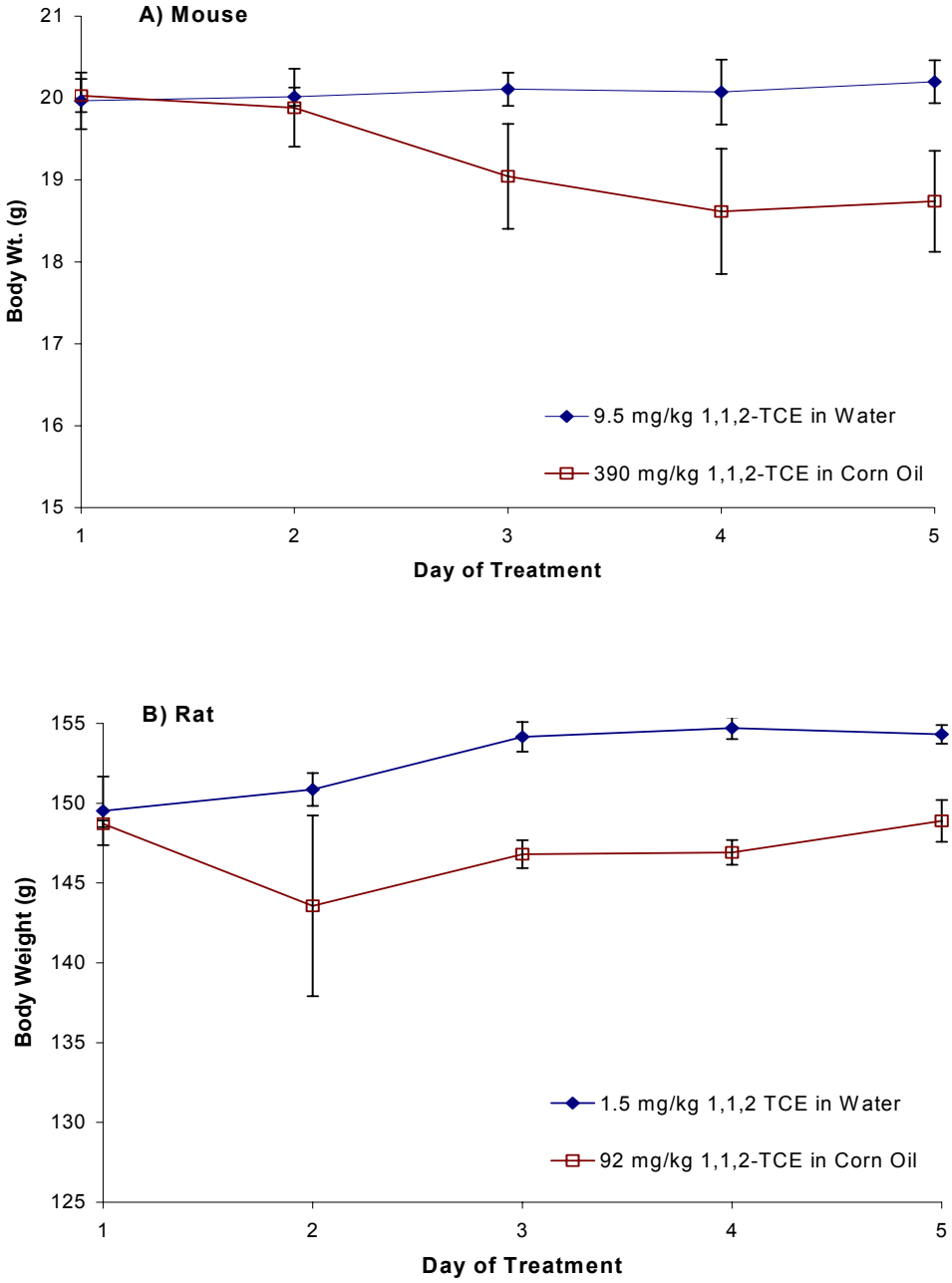

Figure 2. Rat and mouse body weights over the five days of treatment with 1,1,2-TCE in either corn oil or water. Body weights were measured for each animal immediately prior to dosing on each day. These data are from the animals treated for all 5 days only (n=12).

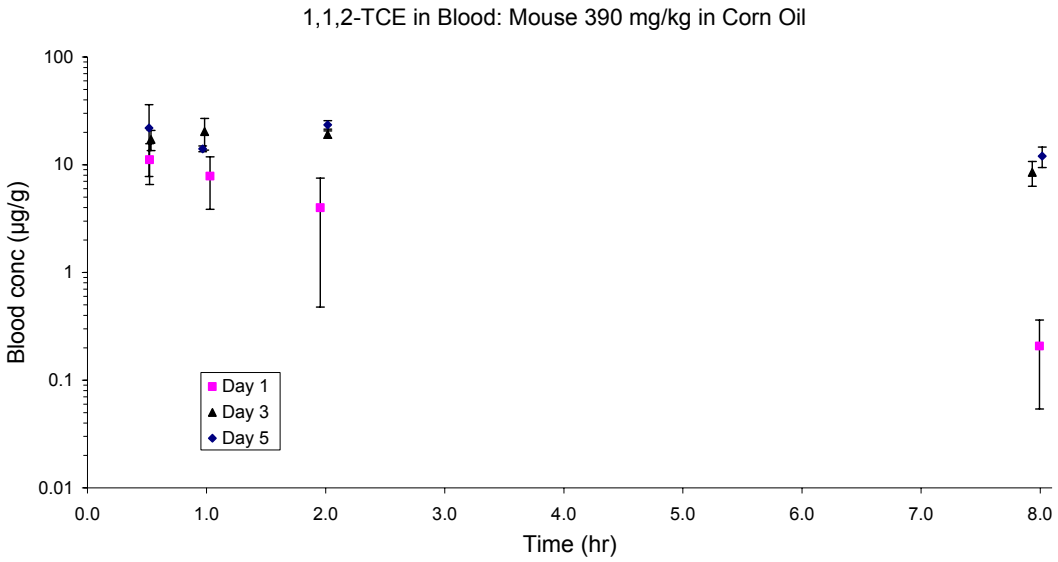

Figure 3. Blood 1,1,2-TCE concentrations in female B6C3F1 mice following corn oil gavage with a target of 390 mg/kg/day for 5 days. Mice were sacrificed and blood taken at time points on days 1, 3, and 5.

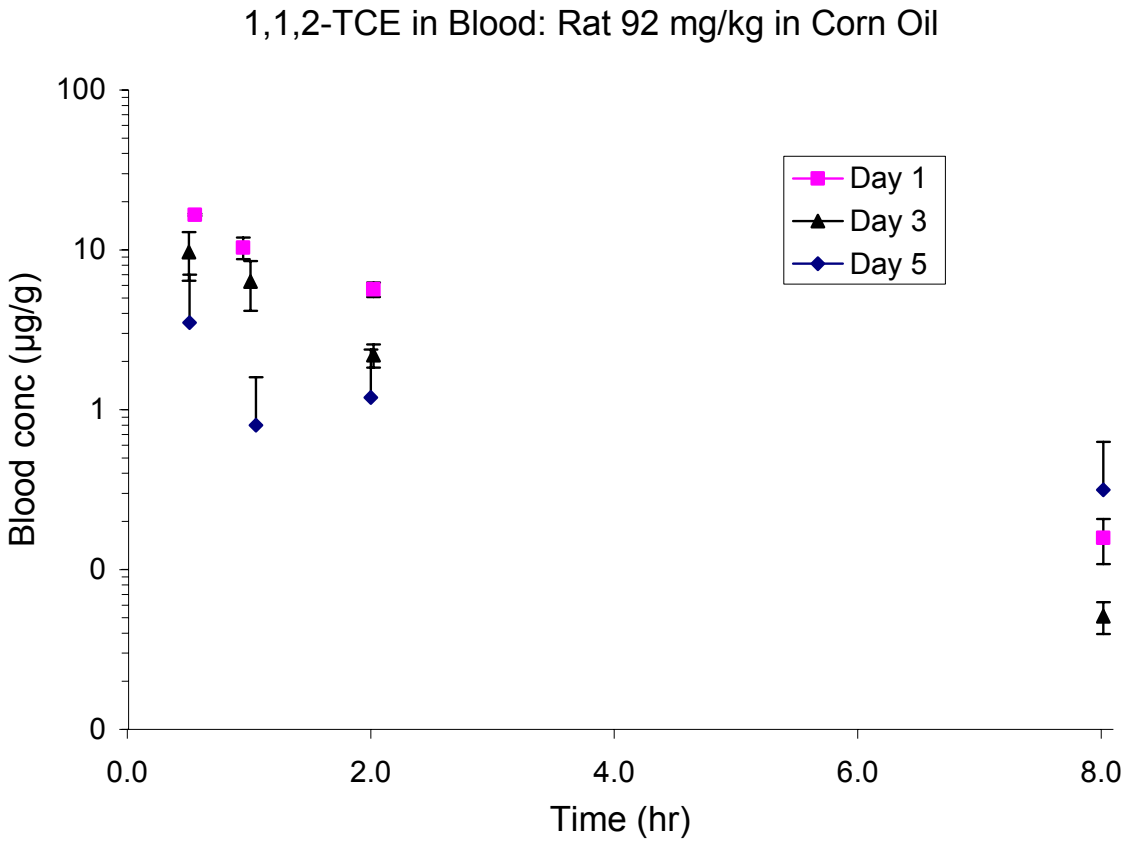

Figure 4. Blood 1,1,2-TCE concentrations in female F344 rats following corn oil gavage with a target of 92 mg/kg/day for 5 days. Rats were sacrificed and blood taken at time points on days 1, 3, and 5.

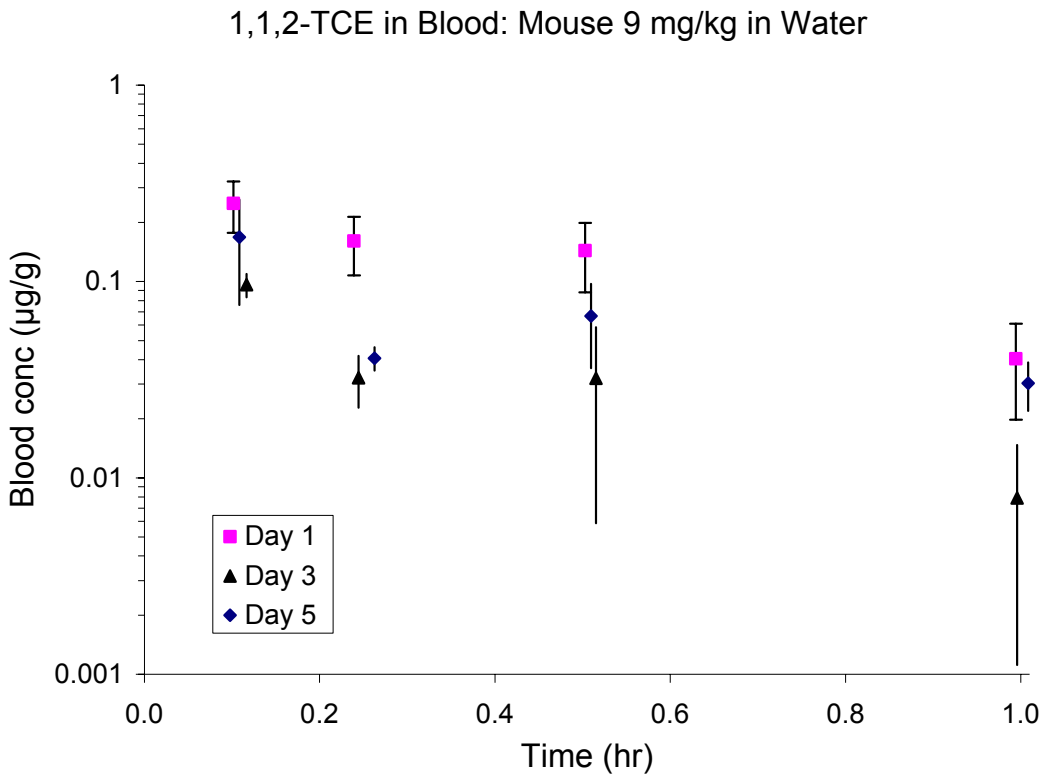

Figure 5. Blood 1,1,2-TCE concentrations in female B6C3F1 mice following water gavage with a target of 10 mg/kg/day for 5 days.

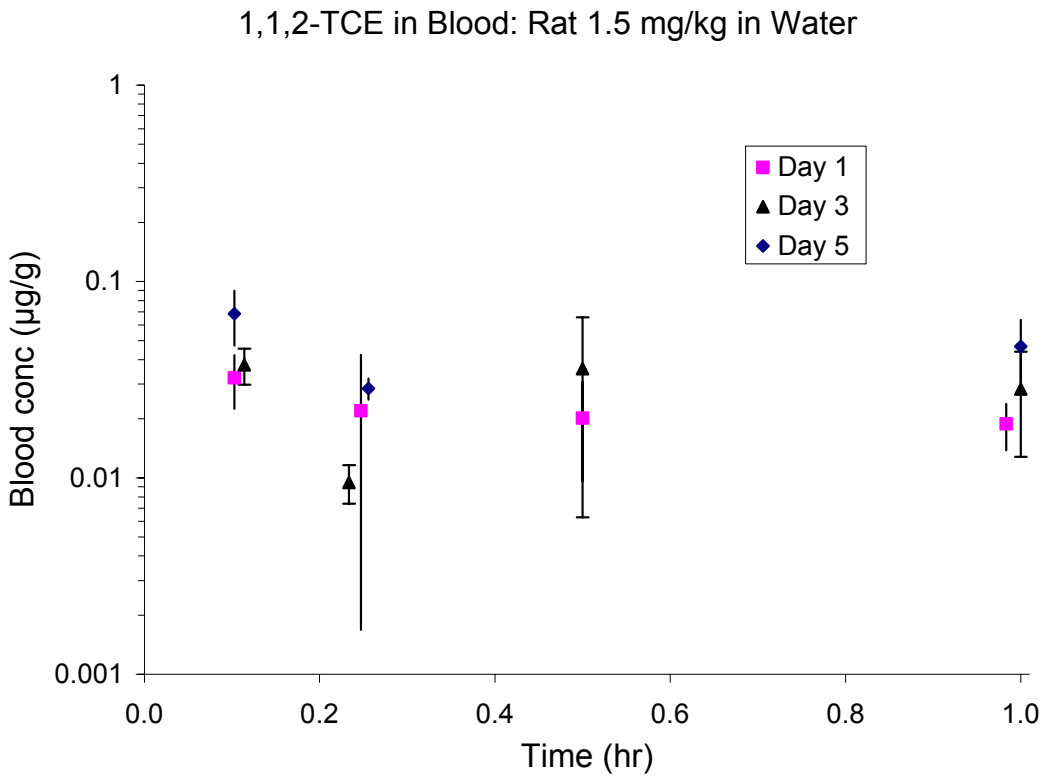

Figure 6. Blood 1,1,2-TCE concentrations in female F344 rats following water gavage with a target of 1.7 mg/kg/day for 5 days.

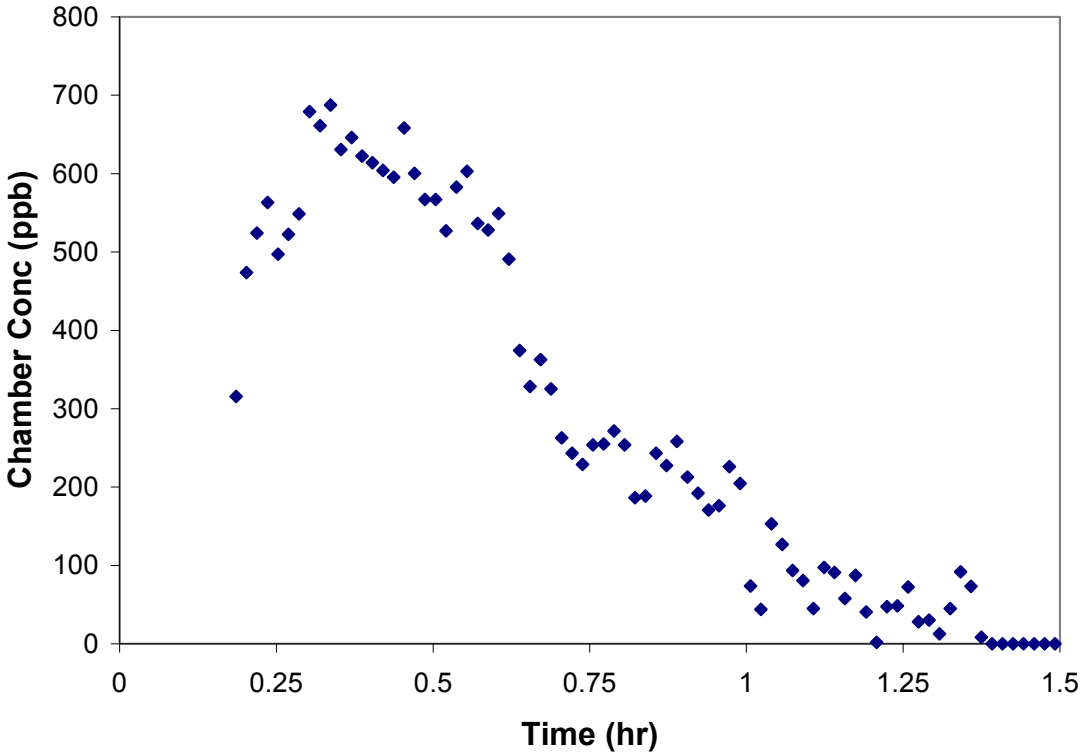

Figure 7. Chamber concentrations of 1,1,2-TCE following corn oil gavage with 26.6 mg/kg in 5 female B6C3F1 mice.

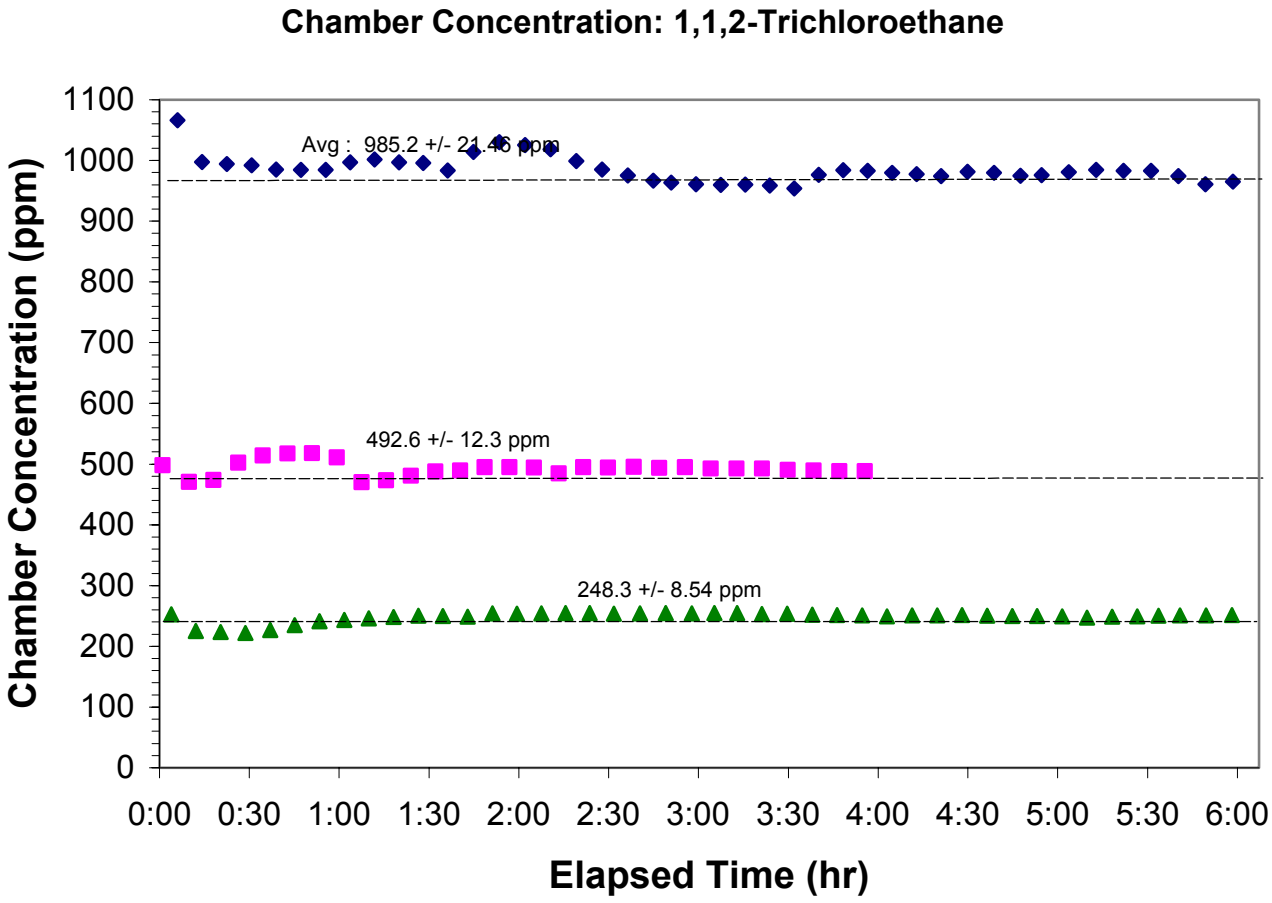

Figure 8. Mice were exposed to 1,1,2-TCE by inhalation exposure for 4-6 hr at target concentrations of 1000, 500, and 250 ppm. Exposure chamber concentrations were measured approximately every 8 minutes over the time of exposure. The average exposure concentration ± S.D. is given above the data from each exposure concentration.

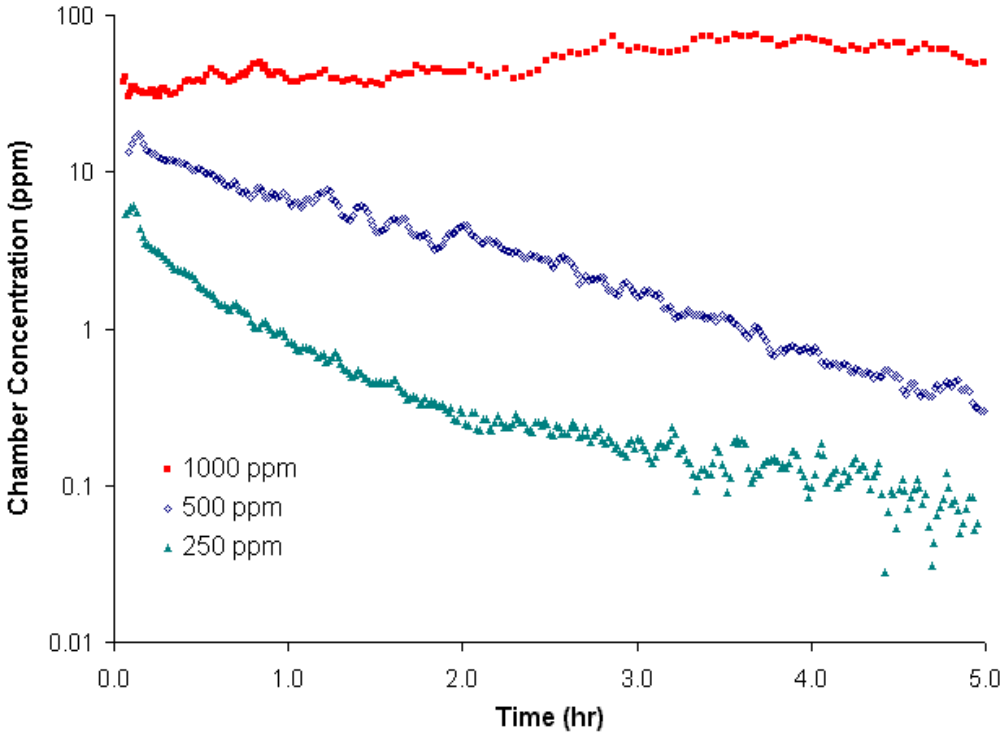

Figure 9. Off-gassing of 1,1,2-TCE following 4-6 hr inhalation exposures (points averaged every one minute interval). Five mice were exposed to target concentrations of 1000, 500, or 250 ppm of 1,1,2-TCE via inhalation and off-gassing of 1,1,2-TCE measured using a real-time MS/MS system.

Table 1. Inhalation Study Storage Spikes

	Average Gravimetric Conc. (µg/ml)	*GC/FID % of Target ± SD*
Mouse Blood Samples	173.6	98.2 ± *8.5*
Rat Blood Samples	135.9	99.9 ± *11.8*

Storage spikes were provided by WIL Laboratories. The gravimetric concentration was calculated using weights of each component (blood and spike solution) supplied by WIL Laboratories and the concentration of the spike solution. The spike solutions were also supplied by WIL Laboratories and analyzed using GC headspace analysis to determine the accurate concentration. Four storage spikes/species/day (total of 12 for mice and 12 for rats) were provided.

Table 2. Oral Gavage in Corn Oil: 1,1,2-TCE Dose Solutions.

Study	*Target Conc. (mg/ml)*	*Gravimetric Conc. (mg/ml)*	*GC/FID Conc. (mg/ml)*	*GC/FID % of Target*
Mouse: 390 mg/kg target dose	39	39.0	35.0	89.7
Rat: 92 mg/kg target dose	46	46.2	46.5	101.1

Table 3. Oral Gavage in Water: 1,1,2-TCE Dose Solutions.

Study	*Target Conc. (mg/ml)*	*Gravimetric Conc. (mg/ml)*	*GC/FID Conc. (mg/ml)*	*GC/FID % of Target*
Mouse: 10 mg/kg target dose	0.9	0.895	0.891	99.0
Rat: 1.7 mg/kg target dose	0.9	0.882	0.854	94.9

Table 4. Oral Gavage in Corn Oil: Body Weights, Sacrifice Times and Amounts of 1,1,2-TCE.
Mouse: 390 mg/kg target dose

Scheduled Sacrifice Time (hr:min)	*Actual Sacrifice Time (hr:min)*	*Body Wt. at Dosing (kg)*[1]	*Actual Dose (mg/kg)*[2]	*Actual Dose % of Target*
	Day 1			
0:30	0:31 ± 0:01	0.019 ± 0.001	354.3 ± 12.5	90.8
1:00	0:58 ± 0:01	0.020 ± 0.001	352.2 ± 8.5	90.3
2:00	1:57 ± 0:03	0.020 ± 0.001	350.1 ± 7.1	89.7
8:00	8:00 ± 0:02	0.020 ± 0.001	351.7 ± 6.4	90.2
	Day 3			
0:30	0:32 ± 0:02	0.020 ± 0.001	354.2 ± 10.9	90.1
1:00	0:59 ± 0:01	0.019 ± 0.001	391.1 ± 42.6	100.3
2:00	2:01 ± 0:01	0.020 ± 0.001	360.2 ± 32.0	92.4
8:00	7:56 ± 0:01	0.019 ± 0.000	371.7 ± 8.7	95.3
	Day 5			
0:30	0:31 ± 0:01	0.019 ± 0.001	365.3 ± 16.2	93.7
1:00	0:58 ± 0:00	0.019 ± 0.001	399.2 ± 31.3	102.3
2:00	2:01 ± 0:00	0.019 ± 0.001	378.3 ± 48.2	97.0
8:00	8:01 ± 0:01	0.018 ± 0.001	358.1 ± 18.1	91.8
Study Averages				
		0.019 ± 0.001	365.5 ± 25.8	93.7

[1]Animals were dosed on a 5 day schedule, Body Weight and Actual Dose are for the day of sacrifice.
[2]The dose administered was calculated from the pre- and post-dosing syringe weights and the GC analysis of the dosing solution.

Table 5. Oral Gavage Study: Body Weights, Sacrifice Times and Amounts of 1,1,2-TCE.

Rat: 92 mg/kg target dose

Scheduled Sacrifice Time (hr:min)	*Actual Sacrifice Time (hr:min)*	*Body Wt. at Dosing (kg)*[1]	*Actual Dose (mg/kg)*[2]	*Actual Dose % of Target*
	Day 1			
0:30	0:33 ± 0:03	0.145 ± 0.004	97.5 ± 0.9	106.0
1:00	0:57 ± 0:06	0.144 ± 0.003	95.7 ± 1.6	104.0
2:00	2:01 ± 0:01	0.145 ± 0.005	96.1 ± 2.6	104.5
8:00	7:59 ± 0:00	0.149 ± 0.003	97.0 ± 3.2	105.3
	Day 3			
0:30	0:30 ± 0:02	0.148 ± 0.005	96.3 ± 5.0	104.6
1:00	1:00 ± 0:01	0.148 ± 0.006	92.8 ± 4.1	100.9
2:00	2:01 ± 0:01	0.147 ± 0.003	93.4 ± 2.2	101.5
8:00	8:01 ± 0:01	0.147 ± 0.001	95.1 ± 5.4	103.4
	Day 5			
0:30	0:30 ± 0:01	0.149 ± 0.004	93.0 ± 1.8	101.1
1:00	1:03 ± 0:01	0.147 ± 0.008	93.0 ± 4.3	101.1
2:00	2:00 ± 0:02	0.150 ± 0.006	91.3 ± 2.6	99.2
8:00	8:02 ± 0:01	0.150 ± 0.006	89.7 ± 4.6	97.5
Study Averages				
		0.147 ± 0.0043	94.2 ± 3.7	102.4

[1]Animals were dosed on a 5 day schedule, Body Weight and Actual Dose are for the day of sacrifice.
[2]The dose administered was calculated using the pre- and post-dosing syringe weights and the GC analysis of the dosing solution.

Table 6. Oral Gavage in Water: Body Weights, Sacrifice Times and Amounts of 1,1,2-TCE.

Mouse: 10.0 mg/kg target dose

Scheduled Sacrifice Time (hr:min)	*Actual Sacrifice Time (hr:min:sec)*	*Body Wt. at Dosing (kg)*[1]	*Actual Dose (mg/kg)*[2]	*Actual Dose % of Target*
	Day 1			
0:06	0:06:05 ± 0:00:09	0.019 ± 0.001	9.9 ± 0.8	99.0
0:15	0:14:20 ± 0:00:17	0.019 ± 0.001	10.0 ± 0.9	100.0
0:30	0:30:10 ± 0:00:23	0.019 ± 0.001	9.5 ± 0.7	95.0
1:00	0:59:40 ± 0:00:31	0.019 ± 0.001	9.6 ± 0.3	96.0
	Day 3			
0:06	0:07:00 ± 0:01:09	0.019 ± 0.000	9.6 ± 0.3	96.0
0:15	0:14:40 ± 0:00:31	0.019 ± 0.001	10.6 ± 2.2	106.0
0:30	0:30:55 ± 0:00:46	0.019 ± 0.000	10.7 ± 2.0	107.0
1:00	0:59:45 ± 0:00:15	0.019 ± 0.000	9.5 ± 1.5	95.0
	Day 5			
0:06	0:06:30 ± 0:00:30	0.020 ± 0.001	9.6 ± 0.2	96.0
0:15	0:15:45 ± 0:00:15	0.020 ± 0.000	9.5 ± 0.1	95.0
0:30	0:30:10 ± 0:00:23	0.019 ± 0.001	9.3 ± 0.8	93.0
1:00	0:59:40 ± 0:00:31	0.018 ± 0.001	9.3 ± 0.6	93.0
	Study Averages			
		0.019 ± 0.001	9.7 ± 1.1	97.0

[1]Animals were dosed on a 5 day schedule, Body Weight and Actual Dose are for the day of sacrifice.
[2]The dose administered was calculated from the pre- and post-dosing syringe weights and the GC analysis of the dosing solution.

Table 7. Oral Gavage In Water: Body Weights, Sacrifice Times and Amounts of 1,1,2-TCE.

Rat: 1.7 mg/kg target dose

Scheduled Sacrifice Time (hr:min)	*Actual Sacrifice Time (hr:min)*	*Body Wt. at Dosing (kg)*[1]	*Actual Dose (mg/kg)*[2]	*Actual Dose % of Target*
	Day 1			
0:06	0:06:10 ± 0:00:09	0.148 ± 0.001	1.7 ± 0.01	100.0
0:15	0:14:50 ± 0:00:31	0.147 ± 0.002	1.7 ± 0.09	100.0
0:30	0:30:55 ± 0:00:38	0.149 ± 0.002	1.7 ± 0.04	100.0
1:00	0:59:50 ± 0:00:31	0.148 ± 0.003	1.7 ± 0.06	100.0
	Day 3			
0:06	0:06:50 ± 0:00:35	0.154 ± 0.004	1.6 ± 0.08	94.1
0:15	0:14:45 ± 0:00:00	0.151 ± 0.004	1.6 ± 0.11	94.1
0:30	0:30:00 ± 0:01:31	0.152 ± 0.002	1.6 ± 0.03	94.1
1:00	0:59:45 ± 0:00:15	0.150 ± 0.003	1.9 ± 0.28	111.8
	Day 5			
0:06	0:06:10 ± 0:00:23	0.155 ± 0.002	1.7 ± 0.03	100.0
0:15	0:15:20 ± 0:00:31	0.154 ± 0.005	1.4 ± 0.07	82.4
0:30	0:30:20 ± 0:01:02	0.153 ± 0.005	1.6 ± 0.02	94.1
1:00	1:00:00 ± 0:00:26	0.154 ± 0.001	1.5 ± 0.18	88.2
	Study Averages			
		0.152 ± 0.004	1.7 ± 0.15	97.6

[1]Animals were dosed on a 5 day schedule, Body Weight and Actual Dose are for the day of sacrifice.

[2]The dose administered was calculated using the pre- and post-dosing syringe weights and the GC analysis of the dosing solution.

Table 8. Corn Oil Gavage: Preliminary study to determine the utility of MS/MS system. Body Weights, Amounts of 1,1,2-TCE.

Mouse	BW (g)	target vol (µl)	syringe pre-weight	syringe post-weight	Inj (ml)	Dose Inj mg/kg	
1	22	220	5.199	4.944	0.254	28.91	
2	23	230	5.156	4.905	0.251	27.25	
3	23	230	5.140	4.915	0.225	24.42	
4	24	240	**Syringe weights not recorded**				
5	23	230	5.132	4.896	0.236	25.67	
Avg	23.0					26.6	mg/kg
SD	0.707					1.94	

Note: The administered dose is averaged from animals 1-3 and 5.

Table 9. Female B6C3F1 Blood:Air and Female F344 Rat Brain:air and Spleen:air Partition Coefficients

Tissue	Partition Coefficients (mean ± S.D)
Mouse Blood	71.1 ± 8.03
Rat Spleen	43.0 ± 8.16
Rat Brain	56.1 ± 4.94
Saline	11.7 ± 2.07

APPENDIX

A. Subchronic inhalation exposures to 100 ppm for 6 hr/day conducted at WIL Laboratories

B. Individual animal data for gavage studies

C. Terminal Tissue Weights.

D. Off-Gassing Study

E. Partition Coefficients

Appendix A. Subchronic inhalation exposures to 100 ppm for 6 hr/day conducted at WIL Laboratories

Table A-1. Exposure and blood collection information in mice and rats
Day 1

Animal #	Group #	Exposure Start (HH:MM)	Exposure End (HH:MM)	Time Animal Removed (HH:MM)	Blood Collection Time (HH:MM)	Mean Conc. (ppm)	Body Weight (g)	Study Day of BW	Date of BW
69365	5	08:16	15:16	13:16	13:19	99	156	06/25/01	25
69372	5	08:16	15:16	13:16	13:20	99	159	06/25/01	25
69374	5	08:16	15:16	13:16	13:21	99	166	06/25/01	25
69387	5	08:16	15:16	15:16	15:20	99	156	06/25/01	25
69397	5	08:16	15:16	15:16	15:20	99	169	06/25/01	25
69400	5	08:16	15:16	15:16	15:20	99	171	06/25/01	25
69407	5	08:16	15:16	15:31	15:35	99	155	06/25/01	25
69410	5	08:16	15:16	15:31	15:36	99	156	06/25/01	25
69420	5	08:16	15:16	15:31	15:35	99	148	06/25/01	25
69429	5	08:16	15:16	15:33	17:16	99	149	06/25/01	25
69430	5	08:16	15:16	15:33	17:18	99	163	06/25/01	25
69434	5	08:16	15:16	15:33	17:18	99	170	06/25/01	25
5207	6	07:45	13:45	11:50	11:56	100	22.5	06/25/01	25
5212	6	07:45	13:45	11:50	11:54	100	24.1	06/25/01	25
5214	6	07:45	13:45	11:50	11:53	100	22.2	06/25/01	25
5221	6	07:45	13:45	13:46	13:50	100	22.5	06/25/01	25
5224	6	07:45	13:45	13:46	13:52	100	22.3	06/25/01	25
5225	6	07:45	13:45	13:46	13:55	100	21.7	06/25/01	25
5231	6	07:45	13:45	14:03	14:06	100	21.9	06/25/01	25
5236	6	07:45	13:45	14:03	14:06	100	22.1	06/25/01	25
5238	6	07:45	13:45	14:03	14:07	100	23.3	06/25/01	25
5239	6	07:45	13:45	14:06	15:45	100	23.3	06/25/01	25
5245	6	07:45	13:45	14:06	15:45	100	22.9	06/25/01	25
5249	6	07:45	13:45	14:06	15:47	100	23.0	06/25/01	25

* It should be noted that 2 minutes were subtracted from blood collection times as recorded on form T5-091-5 for this study to account for a discrepancy of 1 minute 40 seconds between the clock used for exposure time and that used in necropsy.

* It should also be noted that exposure was extended for 1 hour on Group 5 to account for problems with the generation system for that group that occurred near the beginning of exposure. Concentrations for this group are reported as a time weighted average over the entire exposure.

(Table A-1 Continued)
Day 3

Animal #	Group #	Exposure Start (HH:MM)	Exposure End (HH:MM)	Time Animal Removed (HH:MM)	Blood Collection Time (HH:MM)	Mean Conc. (ppm)	Body Weight (g)	Study Day of BW	Date of BW
69357	5	06:51	12:51	10:51	10:56	100	160	06/25/01	25
69358	5	06:51	12:51	10:51	10:56	100	155	06/25/01	25
69360	5	06:51	12:51	10:51	10:56	100	146	06/25/01	25
69399	5	06:51	12:51	12:51	12:54	100	159	06/25/01	25
69403	5	06:51	12:51	12:51	12:55	100	169	06/25/01	25
69411	5	06:51	12:51	12:51	12:54	100	160	06/25/01	25
69418	5	06:51	12:51	13:06	13:11	100	162	06/25/01	25
69421	5	06:51	12:51	13:06	13:11	100	162	06/25/01	25
69422	5	06:51	12:51	13:06	13:11	100	171	06/25/01	25
69423	5	06:51	12:51	13:08	14:52	100	164	06/25/01	25
69424	5	06:51	12:51	13:08	14:50	100	176	06/25/01	25
69425	5	06:51	12:51	13:08	14:52	100	180	06/25/01	25
5209	6	07:20	13:20	11:20	11:39	100	22.1	06/25/01	25
5215	6	07:20	13:20	11:20	11:39	100	22.9	06/25/01	25
5216	6	07:20	13:20	11:20	11:39	100	21.7	06/25/01	25
5217	6	07:20	13:20	13:21	13:24	100	24.6	06/25/01	25
5218	6	07:20	13:20	13:21	13:24	100	23.2	06/25/01	25
5220	6	07:20	13:20	13:21	13:24	100	23.2	06/25/01	25
5222	6	07:20	13:20	13:35	13:38	100	23.2	06/25/01	25
5226	6	07:20	13:20	13:35	13:38	100	22.9	06/25/01	25
5229	6	07:20	13:20	13:35	13:39	100	21.9	06/25/01	25
5234	6	07:20	13:20	13:46	15:21	100	23.8	06/25/01	25
5247	6	07:20	13:20	13:46	15:20	100	23.6	06/25/01	25
5248	6	07:20	13:20	13:46	15:20	100	22.2	06/25/01	25

* It should be noted that 2 minutes were subtracted from blood collection times as recorded on form T5-091-5 for this study to account for a discrepancy of 1 minute 40 seconds between the clock used for exposure time and that used in necropsy.

(Table A-1 Continued)
Day 5

Animal #	Group #	Exposure Start (HH:MM)	Exposure End (HH:MM)	Time Animal Removed (HH:MM)	Blood Collection Time (HH:MM)	Mean Conc. (ppm)	Body Weight (g)	Study Day of BW	Date of BW
69355	5	06:54	12:54	10:54	10:59	101	174	06/25/01	25
69363	5	06:54	12:54	10:54	10:59	101	178	06/25/01	25
69364	5	06:54	12:54	10:54	10:59	101	164	06/25/01	25
69368	5	06:54	12:54	12:54	12:58	101	158	06/25/01	25
69373	5	06:54	12:54	12:54	12:57	101	152	06/25/01	25
69386	5	06:54	12:54	12:54	12:58	101	164	06/25/01	25
69389	5	06:54	12:54	13:09	13:12	101	137	06/25/01	25
69401	5	06:54	12:54	13:09	13:12	101	170	06/25/01	25
69405	5	06:54	12:54	13:09	13:12	101	150	06/25/01	25
69406	5	06:54	12:54	13:11	14:57	101	161	06/25/01	25
69412	5	06:54	12:54	13:11	14:57	101	145	06/25/01	25
69414	5	06:54	12:54	13:11	14:56	101	144	06/25/01	25
5204	6	07:21	13:21	11:21	11:25	100	21.5	06/25/01	25
5205	6	07:21	13:21	11:21	11:25	100	23.1	06/25/01	25
5206	6	07:21	13:21	11:21	11:25	100	21.7	06/25/01	25
5210	6	07:21	13:21	13:22	13:25	100	22.6	06/25/01	25
5219	6	07:21	13:21	13:22	13:25	100	23.0	06/25/01	25
5227	6	07:21	13:21	13:22	13:25	100	22.5	06/25/01	25
5228	6	07:21	13:21	13:36	13:40	100	23.4	06/25/01	25
5230	6	07:21	13:21	13:36	13:40	100	24.2	06/25/01	25
5232	6	07:21	13:21	13:36	13:40	100	22.3	06/25/01	25
5235	6	07:21	13:21	13:41	15:23	100	22.7	06/25/01	25
5240	6	07:21	13:21	13:41	15:23	100	22.7	06/25/01	25
5242	6	07:21	13:21	13:41	15:23	100	22.7	06/25/01	25

Table A-2. Blood concentrations following inhalation exposures

Samples from Wil Labs
Limit of detection 0.013 µg/g

B6C3F1 Mouse Inhalation Exposures, Data collected June 25-29, 2001

Collection Date 25-Jun An#	Time hr	Sample Duplicates blood conc (µg/g) a	b	avg	Average for Timepoint AVG	SD
5207	4.16	0.639	0.57	0.6045	0.608	0.014
5212		0.572	0.621	0.5965		
5214		0.623		0.623		
5221	6.12	1.121	0.97	1.0455	0.951	0.083
5224		0.852	0.979	0.9155		
5225		0.859	0.922	0.8905		
5231	6.36	1.174	1.289	1.2315	0.960	0.243
5236		0.807	0.722	0.7645		
5238		0.783	0.984	0.8835		
5239	8.01	0.047	0.015	0.031	0.022	0.009
5245		0.012	0.014	0.013		
5249		0.024	0.022	0.023		

Collection Date 27-Jun An#	Time hr	Sample Duplicates blood conc (µg/g) a	b	avg	Average for Timepoint AVG	SD
5209	4.32	2.08	2.02	2.05	1.838	0.277
5215		1.5	1.55	1.525		
5216		1.84	2.04	1.94		
5217	6.07	1.89	2.18	2.035	1.728	0.368
5218		1.8	1.86	1.83		
5220		1.11	1.53	1.32		
5222	6.31	0.53	0.58	0.555	0.433	0.107
5226		0.39	0.39	0.39		
5229		0.41	0.3	0.355		
5234	8.01	ND				
5247		ND				
5248		0				

(Table A-2 Continued)

Collection Date 29-Jun An#	Time hr	Sample Duplicates blood conc (µg/g) a	b	avg	Average for Timepoint AVG	SD
5204	4.07	1.98	2.29	2.135	1.983	0.167
5205		1.78	1.83	1.805		
5206		1.77	2.25	2.01		
5210	6.07	2.33	2.74	2.535	2.162	0.368
5219		2.15	2.15	2.15		
5227		1.74	1.86	1.8		
5228	6.32	0.74	0.67	0.705	0.592	0.098
5230		0.54	0.53	0.535		
5232		0.54	0.53	0.535		
5235	8.03	0.04	0.04	0.04	0.055	0.015
5240		0.07	0.07	0.07		
5242		0.06	0.05	0.055		

Table A-3. Blood concentrations following inhalation exposures in rats

F344 RAT Inhalation Exposures, Data collected June 25-29, 2001

Collection Date 25-Jun An#	Time hr	Sample Duplicates blood conc (µg/g) a	b	avg	Average for Timepoint AVG	SD
69365	5.07	1.87	2.29	2.08	1.997	0.101
69372		2.01	1.76	1.885		
69374		2.03	2.02	2.025		
69387	7.07	2.6	2.63	2.615	2.337	0.345
69397		2.33	2.56	2.445		
69400		2	1.9	1.95		
69407	7.32	1.016	0.964	0.99	0.936	0.047
69410		0.89	0.923	0.9065		
69420		0.927	0.893	0.91		
69429	9.02	0.122	0.125	0.1235	0.132	0.027
69430		0.168	0.156	0.162		
69434		0.105	0.115	0.11		

Collection Date 27-Jun An#	Time Hr	Sample Duplicates blood conc (µg/g) a	b	duplicate avg	Average for Timepoint AVG	SD
69357	4.08	1.84	1.8	1.82	1.777	0.051
69358		1.74	1.7	1.72		
69360		1.9	1.68	1.79		
69399	6.06	1.79	2.38	2.085	1.738	0.355
69403		1.77	1.74	1.755		
69411		1.41	1.34	1.375		
69418	6.33	0.64	0.55	0.595	0.533	0.138
69421		0.33	0.42	0.375		
69422		0.53	0.73	0.63		
69423	8.01	0.13	0.2	0.165	0.108	0.058
69424		0.05	0.05	0.05		
69425		0.12	0.1	0.11		

(Table A-3 Continued)

Collection Date 27-Jun An#	Time hr	Sample Duplicates blood conc (µg/g) a	b	avg	Average for Timepoint AVG	SD
69355	4.08	1.62	1.58	1.6	1.415	0.202
69363		1.35	1.54	1.45		
69364		1.17	1.23	1.2		
69368	6.06	1.71	1.63	1.67	1.562	0.214
69373		1.25	1.38	1.32		
69386		1.75	1.65	1.7		
69389	6.30	0.77	0.85	0.81	0.815	0.073
69401		0.75	0.74	0.745		
69405		1	0.78	0.89		
69406	8.04	0.29	0.32	0.305	0.203	0.100
69412		0.16	0.24	0.2		
69414		0.11	0.1	0.105		

Appendix B. Individual Animal Data from Demonstration of Periodicity Following Repeated Gavage Administrations.

B-1. Mouse Corn Oil Gavage

Day 1

An #	BW (g)	Dose (mg/kg)	Time (min)	Time (hr)	Sample Duplicates A	Sample Duplicates B	1,1,2-TCE Avg	AVG BW (g)	SD	AVG Dose (mg/kg)	SD	AVG Time (hr)	1,1,2TCE conc. timepoint AVG AVG (µg/g)	SD
BNW-M001	19.2	355.3	30	0.50	15.350		15.350	19.5	0.57	354.3	12.48	0.52	11.132	4.577
BNW-M002	20.2	341.4	31	0.52	5.830	6.700	6.265							
BNW-M003	19.2	366.3	33	0.55	12.580	10.980	11.780							
BNW-M004	19.3	343.1	60	1.00	5.860		5.860	19.8	0.57	352.2	8.45	0.98	7.837	3.991
BNW-M005	19.7	359.7	58	0.97	5.350	5.090	5.220							
BNW-M006	20.5	353.9	58	0.97	12.430		12.430							
BNW-M007	19.5	355.8	119	1.99	9.230	6.640	7.935	20.0	0.66	350.1	7.09	1.96	3.988	3.511
BNW-M008	19.7	352.4	120	2.00	2.820		2.820							
BNW-M009	20.7	342.2	114	1.90	1.210		1.210							
BNW-M010	19.5	346.3	478	7.96	0.649	0.094	0.371	20.2	0.61	351.7	6.43	8.00	0.208	0.154
BNW-M011	20.6	350.0	482	8.03	0.190	0.184	0.187							
BNW-M012	20.5	358.8	482	8.03	0.066		0.066							

Day 3

								AVG BW (g)	SD	AVG Dose (mg/kg)	SD	AVG Time (hr)	1,1,2TCE conc. timepoint AVG AVG (µg/g)	SD
BNW-M013	19.1	364.9	30	0.50	17.005	17.077	17.041	19.9	0.70	354.2	10.85	0.54	17.172	3.640
BNW-M014	20.2	343.2	32	0.53	21.599	20.153	20.876							
BNW-M015	20.4	354.4	35	0.58	14.168	13.032	13.600							
BNW-M016	18.9	428.6	58	0.97	11.560	14.450	13.005	19.1	1.02	391.1	42.58	0.98	20.307	6.654
BNW-M017	18.2	399.8	58	0.97	26.040	26.020	26.030							
BNW-M018	20.2	344.8	61	1.02	22.110	21.660	21.885							
BNW-M019	20.0	327.1	120	2.00	18.300	16.440	17.370	19.8	0.63	360.2	32.01	2.02	19.105	1.505
BNW-M020	19.1	391.0	120	2.00	20.990	19.120	20.055							
BNW-M021	20.3	362.5	123	2.05	18.450	21.330	19.890							
BNW-M022	18.4	375.8	478	7.97	7.210	8.120	7.665	18.7	0.44	371.7	8.67	7.94	8.500	2.195
BNW-M023	18.5	377.5	477	7.95	10.990		10.990							
BNW-M024	19.2	361.7	475	7.92	7.010	6.680	6.845							

Table B-1 Continued

								AVG		AVG		AVG	1,1,2TCE conc. timepoint AVG	

Day 5								BW (g)	SD	Dose (mg/kg)	SD	Time (hr)	AVG (µg/g)	SD
BNW-M025	17.7	372.9	30	0.50	35.100	37.680	36.390	19.2	1.45	365.3	16.16	0.52	25.013	10.805
BNW-M026	19.3	376.2	30	0.50	23.430	24.090	23.760							
BNW-M027	20.6	346.7	33	0.55	14.890		14.890							
BNW-M028	18.4	414.8	58	0.97	11.290	16.880	14.085	19.0	0.57	399.2	31.30	0.98	18.020	4.876
BNW-M029	19.5	363.2	59	0.98	16.500		16.500							
BNW-M030	19.2	419.7	59	0.98	27.970	18.980	23.475							
BNW-M031	18.2	411.3	121	2.02	25.370	22.980	24.175	19.0	0.71	378.3	48.19	2.02	23.462	2.136
BNW-M032	19.1	400.6	121	2.02	20.870	21.250	21.060							
BNW-M033	19.6	323.0	121	2.02	23.190	27.110	25.150							
BNW-M034	18.1	337.6	480	8.00	11.770		11.770	17.8	0.64	358.1	18.13	8.03	12.022	2.577
BNW-M035	17.1	372.1	482	8.03	9.580		9.580							
BNW-M036	18.3	364.5	483	8.05	8.520	20.910	14.715							
Avg	19.3	365.5												
SD	0.91	25.8		93.72%										

B-2. Rat Corn Oil Gavage

Day 1													1,1,2TCE conc.	
		Dose	Time	Time	Sample Duplicates		1,1,2-TCE	AVG		AVG		AVG	timepoint AVG	
An #	BW (g)	(mg/kg)	(min)	(hr)	A	B	Avg	BW (g)	SD	Dose (mg/kg)	SD	Time (hr)	AVG (µg/g)	SD
BNW-R001	148.2	97.6	34	0.567	15.73	18.09	16.910	145.2	3.84	97.5	0.85	0.56	16.562	0.303
BNW-R002	140.9	98.3	33	0.550	16.33	16.51	16.420			106.0%				
BNW-R003	146.6	96.6	33	0.550	16.52	16.19	16.355							
BNW-R004	146.8	94.3	50	0.833	9.06	9.00	9.030	144.4	3.04	95.7	1.57	0.95	10.328	1.603
BNW-R005	141.0	97.4	60	1.000	11.52	12.72	12.120			104.0%				
BNW-R006	145.5	95.4	61	1.017	9.97	9.70	9.835							
BNW-R007	147.6	96.0	122	2.033	5.20	5.44	5.320	145.0	5.15	96.1	2.60	2.02	5.668	0.595
BNW-R008	139.1	98.8	122	2.033	5.56	5.10	5.330			104.5%				
BNW-R009	148.4	93.6	120	2.000	5.98	6.73	6.355							
BNW-R010	152.0	93.5	479	7.983	0.23	0.20	0.211	149.4	2.77	97.0	3.16	8.02	0.158	0.050
BNW-R011	146.5	99.6	482	8.033	0.15	0.15	0.150			105.5%				
BNW-R012	149.8	98.0	482	8.033	0.11	0.12	0.113							
													1,1,2TCE conc.	
								AVG		AVG		AVG	timepoint AVG	
Day 3								BW (g)	SD	Dose (mg/kg)	SD	Time (hr)	AVG (µg/g)	SD
BNW-R013	145.5	91.3	29	0.483	6.42	5.92	6.170	147.6	4.77	96.3	5.00	0.51	9.675	3.250
BNW-R014	153.1	101.3	28	0.467	9.74	10.79	10.265			104.6%				
BNW-R015	144.3	96.2	34	0.567	12.82	12.36	12.590							
BNW-R016	146.6	94.6	59	0.983	5.62	5.30	5.460	148.0	5.93	92.8	4.11	1.01	6.343	2.183
BNW-R017	154.5	88.1	61	1.017	6.92	2.56	4.740			100.9%				
BNW-R018	142.9	95.7	62	1.033	8.56	9.10	8.830							
BNW-R019	145.2	94.5	120	2.000	2.53	2.58	2.555	146.5	3.29	93.4	2.17	2.02	2.197	0.368
BNW-R020	150.2	90.9	121	2.017	1.77	1.87	1.820			101.5%				
BNW-R021	144.0	94.8	123	2.050	2.11	2.32	2.215							
BNW-R022	147.2	91.1	479	7.983	0.05	0.05	0.050	147.3	1.30	95.1	5.44	8.02	0.051	0.012
BNW-R023	146.0	92.9	482	8.033	0.04	0.04	0.040			103.4%				
BNW-R024	148.6	101.3	482	8.033	0.04	0.08	0.063							
Table B-2 Continued													1,1,2TCE conc.	

Day 5								AVG BW (g)	SD	AVG Dose (mg/kg)	SD	AVG Time (hr)	timepoint AVG AVG (µg/g)	SD
BNW-R025	150.9	91.1	29	0.483	12.89	13.97	13.430	148.9	3.55	93.0	1.78	0.51	10.145	3.496
BNW-R026	144.8	94.6	31	0.517	10.54	10.53	10.535			101.1%				
BNW-R027	151.0	93.4	32	0.533	6.28	6.66	6.470							
BNW-R028	155.7	88.4	63	1.050	7.56	7.94	7.750	147.0	7.51	93.0	4.27	1.06	8.672	0.799
BNW-R029	142.5	93.9	62	1.033	8.84	9.48	9.160			101.1%				
BNW-R030	142.9	96.8	65	1.083	7.96	10.25	9.105							
BNW-R031	155.0	88.6	118	1.967	4.17	4.17	4.170	149.7	5.75	91.3	2.65	2.00	4.240	1.192
BNW-R032	143.6	93.9	120	2.000	3.16	3.01	3.085			99.2%				
BNW-R033	150.6	91.3	122	2.033	4.46	6.47	5.465							
BNW-R034	143.9	92.3	482	8.033	0.17	0.15	0.160	149.9	6.44	89.7	4.56	8.02	0.283	0.315
BNW-R035	149.1	92.3	479	7.983	0.05	0.05	0.048			97.5%				
BNW-R036	156.7	84.4	482	8.033	0.68	0.60	0.640							
Avg	147.422	94.244												
SD	4.342	3.719		102.44%										

B-3. Mouse Water Gavage

Day 1														
					Sample Duplicates		1,1,2-TCE	AVG		AVG		AVG	1,1,2TCE conc. timepoint AVG	
An #	BW (g)	Dose (mg/kg)	Time (min)	Time (hr)	A	B	Avg	BW (g)	SD	Dose (mg/kg)	SD	Time (hr)	AVG (µg/g)	SD
BNW-M101	19.4	9.0	6.0	0.100	0.173	0.160	0.167	18.5	0.81	9.8	0.70	0.10	0.250	0.073
BNW-M102	17.9	10.1	6.0	0.100	0.261	0.304	0.283							
BNW-M103	18.1	10.3	6.3	0.104	0.306	0.296	0.301							
BNW-M104	18.2	10.3	14.5	0.242	0.270		0.270	18.9	1.18	10.0	0.92	0.24	0.217	0.047
BNW-M105	18.3	10.7	14.0	0.233	0.201	0.198	0.200							
BNW-M106	20.3	8.9	14.5	0.242	0.182		0.182							
BNW-M107	20.1	8.8	30.5	0.508	0.130	0.090	0.110	19.6	0.72	9.5	0.73	0.50	0.153	0.038
BNW-M108	20.0	9.6	29.8	0.496	0.168		0.168							
BNW-M109	18.8	10.2	30.3	0.504	0.182		0.182							
BNW-M110	20.4	9.4	59.3	0.988	0.064		0.064	19.4	1.19	9.6	0.29	0.99	0.041	0.020
BNW-M111	19.8	9.4	60.3	1.004	0.034	0.026	0.030							
BNW-M112	18.1	9.9	59.5	0.992	0.030	0.027	0.029							
Day 3								AVG BW (g)	SD	AVG Dose (mg/kg)	SD	AVG Time (hr)	1,1,2TCE conc. timepoint AVG AVG (µg/g)	SD
BNW-M113	18.8	9.9	6.0	0.100	0.310	0.290	0.300	19.0	0.35	9.6	0.26	0.12	0.165	0.117
BNW-M114	19.4	9.4	6.8	0.113	0.086	0.103	0.095							
BNW-M115	18.8	9.6	8.2	0.136	0.110	0.090	0.100							
BNW-M116	18.1	11.5	14.5	0.242	0.041	0.033	0.037	18.6	0.56	10.6	2.18	0.24	0.038	0.008
BNW-M117	18.5	8.1	14.3	0.238	0.032	0.030	0.031							
BNW-M118	19.2	12.1	15.3	0.254	0.032	0.062	0.047							
BNW-M119	18.4	13.0	31.8	0.529	0.016	0.016	0.016	18.8	0.36	10.7	2.03	0.52	0.032	0.026
BNW-M120	18.9	10.2	30.3	0.504	0.071	0.054	0.063							
BNW-M121	19.1	9.1	30.8	0.513	0.016	0.020	0.018							
BNW-M122	19.2	8.7	59.5	0.992	0.014	0.017	0.016	19.0	0.15	9.5	1.45	1.00	0.021	0.007
BNW-M123	19.0	8.6	59.8	0.996	0.026		0.026							
BNW-M124	18.9	11.2	60.0	1.000	nd	nd								
Table B-3 Continued													1,1,2TCE conc.	

Day 5								AVG BW (g)	SD	AVG Dose (mg/kg)	SD	AVG Time (hr)	timepoint AVG AVG (µg/g)	SD
BNW-M125	20.8	9.6	6.5	0.108	0.290	0.210	0.250	19.9	1.03	9.6	0.20	0.11	0.215	0.083
BNW-M126	20.2	9.4	7.0	0.117	0.130	0.110	0.120							
BNW-M127	18.8	9.8	6.0	0.100	0.270	0.280	0.275							
BNW-M128	20.4	9.4	16.0	0.267	0.049	0.044	0.047	20.3	0.15	8.5	1.74	0.26	0.051	0.018
BNW-M129	20.1	9.6	15.5	0.258	0.039	0.032	0.036							
BNW-M130	20.3	6.5	15.8	0.263	0.040	0.100	0.070							
BNW-M131	21.5	8.7	30.3	0.504	0.089		0.089	20.5	0.91	9.3	0.75	0.51	0.067	0.030
BNW-M132	19.7	10.1	31.3	0.521	0.093	0.065	0.079							
BNW-M133	20.4	9.1	30.3	0.504	0.034	0.030	0.032							
BNW-M134	20.9	8.7	60.3	1.004	0.025	0.024	0.025	20.1	0.85	9.3	0.55	1.01	0.030	0.008
BNW-M135	20.1	9.7	60.3	1.004	0.040		0.040							
BNW-M136	19.2	9.6	61.0	1.017	0.027	0.026	0.027							
Avg	19.4	9.7												
SD	0.9	1.1												

B-4. Rat Water Gavage

Day 1														1,1,2TCE conc. timepoint AVG	
An #	BW (g)	Dose (mg/kg)	Time (min)	Time (hr)	Sample Duplicates A	B	1,1,2-TCE Avg	AVG BW (g)	SD	AVG Dose (mg/kg)	SD	AVG Time (hr)	AVG (µg/g)	SD
BNW-R101	147.8	1.69	6.3	0.104	0.047	0.030	0.039	147.7	0.75	1.7	0.01	0.10	0.037	0.002
BNW-R102	146.9	1.70	6.0	0.100	0.038	0.037	0.038							
BNW-R103	148.4	1.70	6.3	0.104	0.032	0.039	0.036							
BNW-R104	144.6	1.73	15.3	0.254	0.020	0.020	0.020	146.6	2.11	1.7	0.09	0.25	0.027	0.016
BNW-R105	146.3	1.84	14.3	0.238	0.015	0.014	0.015							
BNW-R106	148.8	1.67	15.0	0.250	0.030	0.060	0.045							
BNW-R107	150.2	1.70	30.3	0.504	0.020	0.020	0.020	149.1	1.93	1.7	0.03	0.52	0.024	0.006
BNW-R108	146.9	1.71	31.0	0.517	0.041	0.021	0.031							
BNW-R109	150.3	1.65	31.5	0.525	0.022	0.017	0.020							
BNW-R110	151.6	1.60	60.3	1.004	0.014	0.014	0.014	150.4	1.85	1.7	0.06	1.00	0.018	0.006
BNW-R111	148.3	1.72	59.3	0.988	0.020	0.010	0.015							
BNW-R112	151.4	1.68	60.0	1.000	0.029	0.020	0.025							
Day 3								AVG BW (g)	SD	AVG Dose (mg/kg)	SD	AVG Time (hr)	1,1,2TCE conc. timepoint AVG AVG (µg/g)	SD
BNW-R113	150.7	1.69	7.5	0.125	0.043	0.047	0.045	153.6	4.16	1.6	0.08	0.11	0.038	0.008
BNW-R114	158.4	1.54	6.5	0.108	0.028	0.031	0.030							
BNW-R115	151.8	1.68	6.5	0.108	0.037	0.040	0.039							
BNW-R116	146.6	1.75	14.8	0.246	0.014		0.014	150.9	3.72	1.6	0.11	0.25	0.024	0.014
BNW-R117	153.4	1.55	14.8	0.246	0.018		0.018							
BNW-R118	152.6	1.59	14.8	0.246	0.050	0.030	0.040							
BNW-R119	150.1	1.61	28.3	0.471	0.020	0.010	0.015	152.0	2.07	1.6	0.03	0.50	0.026	0.018
BNW-R120	154.2	1.66	31.0	0.517	0.015		0.015							
BNW-R121	151.6	1.64	30.8	0.513	0.041	0.053	0.047							
BNW-R122	151.5	1.80	59.8	0.996	0.052	0.037	0.045	149.7	2.92	1.9	0.28	1.00	0.028	0.016
BNW-R123	146.3	1.68	60.3	1.004	0.027	0.027	0.027							
BNW-R124	151.2	2.22	60.0	1.000	0.014	0.013	0.014							
Table B-4 Continued													1,1,2TCE conc.	

Day 5								AVG BW (g)	SD	AVG Dose (mg/kg)	SD	AVG Time (hr)	timepoint AVG AVG (µg/g)	SD
BNW-R125	153.7	1.76	6.3	0.104	0.068	0.079	0.074	155.1	2.17	1.7	0.03	0.10	0.065	0.018
BNW-R126	154.0	1.71	5.8	0.096	0.074	0.079	0.077							
BNW-R127	157.6	1.73	6.5	0.108	0.047	0.041	0.044							
BNW-R128	150.3	1.49	15.5	0.258	0.028	0.024	0.026	153.7	4.75	1.4	0.08	0.26	0.029	0.004
BNW-R129	159.1	1.34	15.8	0.263	0.027	0.038	0.033							
BNW-R130	151.6	1.45	14.8	0.246	0.027		0.027							
BNW-R131	156.3	1.63	29.5	0.492	0.013	0.013	0.013	153.4	5.43	1.7	0.02	0.51	0.023	0.009
BNW-R132	156.7	1.65	31.5	0.525	0.038	0.016	0.027							
BNW-R133	147.1	1.67	30.0	0.500	0.014	0.046	0.030							
BNW-R134	163.9	1.54	59.8	0.996	0.016	0.046	0.031	156.7	6.33	1.5	0.18	1.00	0.025	0.010
BNW-R135	152.0	1.33	60.5	1.008	0.014		0.014							
BNW-R136	154.2	1.68	59.8	0.996	0.031		0.031							
Avg	151.6	1.66												
SD	4.2	0.15												

Appendix C. Terminal Tissue Weights.

Table C-1. Oral Gavage: Female B6C3F1 Mouse 390 mg/kg target dose in corn oil

Scheduled Sacrifice (hr)	Lung wt (g)	Liver wt. (g)	Kidney wt. (g)	Spleen wt. (g)	Brain wt. (g)
Day 1					
0.5	0.177 ± 0.008	1.05 ± 0.061	0.282 ± 0.005	0.079 ± 0.003	0.464 ± 0.014
1	0.180 ± 0.021	1.03 ± 0.089	0.290 ± 0.031	0.076 ± 0.005	0.468 ± 0.011
2	0.178 ± 0.001	0.99 ± 0.065	0.300 ± 0.013	0.070 ± 0.002	0.475 ± 0.002
8	0.163 ± 0.013	0.94 ± 0.082	0.270 ± 0.003	0.068 ± 0.001	0.466 ± 0.014
Day 3					
0.5	0.170 ± 0.031	1.17 ± 0.115	0.276 ± 0.005	0.083 ± 0.003	0.474 ± 0.013
1	0.165 ± 0.014	1.00 ± 0.111	0.275 ± 0.009	0.069 ± 0.002	0.471 ± 0.005
2	0.167 ± 0.002	1.09 ± 0.061	0.284 ± 0.019	0.064 ± 0.004	0.469 ± 0.014
8	0.163 ± 0.013	0.94 ± 0.082	0.270 ± 0.003	0.068 ± 0.001	0.466 ± 0.014
Day 5					
0.5	0.184 ± 0.046	1.34 ± 0.155	0.283 ± 0.015	0.066 ± 0.015	0.467 ± 0.004
1	0.154 ± 0.017	1.38 ± 0.015	0.273 ± 0.002	0.068 ± 0.003	0.455 ± 0.006
2	0.154 ± 0.012	1.26 ± 0.081	0.284 ± 0.004	0.071 ± 0.013	0.460 ± 0.001
8	0.151 ± 0.008	1.22 ± 0.078	0.255 ± 0.056	0.073 ± 0.01	0.449 ± 0.010

Table C-2. Oral Gavage: Female F344 Rat 92 mg/kg target dose in corn oil

Scheduled Sacrifice (hr)	Lung wt (g)	Liver wt. (g)	Kidney wt. (g)	Spleen wt. (g)	Brain wt. (g)
Day 1					
0.5	0.731 ± 0.047	4.89 ± 0.385	1.11 ± 0.034	0.391 ± 0.017	1.67 ± 0.047
1	0.678 ± 0.019	5.04 ± 0.155	1.12 ± 0.068	0.370 ± 0.030	1.66 ± 0.037
2	0.715 ± 0.035	4.92 ± 0.307	1.09 ± 0.078	0.367 ± 0.014	1.65 ± 0.042
8	0.737 ± 0.032	4.71 ± 0.317	1.10 ± 0.054	0.352 ± 0.018	1.62 ± 0.033
Day 3					
0.5	0.698 ± 0.023	5.21 ± 0.131	1.11 ± 0.054	0.377 ± 0.015	1.62 ± 0.050
1	0.731 ± 0.070	5.16 ± 0.293	1.18 ± 0.016	0.365 ± 0.038	1.67 ± 0.046
2	0.721 ± 0.018	5.04 ± 0.081	1.18 ± 0.038	0.355 ± 0.012	1.67 ± 0.047
8	0.739 ± 0.052	4.70 ± 0.211	1.15 ± 0.059	0.340 ± 0.008	1.63 ± 0.051
Day 5					
0.5	0.723 ± 0.010	5.19 ± 0.217	1.17 ± 0.059	0.345 ± 0.009	1.63 ± 0.011
1	0.726 ± 0.031	5.16 ± 0.345	1.19 ± 0.029	0.360 ± 0.016	1.62 ± 0.041
2	0.715 ± 0.009	5.13 ± 0.218	1.15 ± 0.014	0.349 ± 0.008	1.68 ± 0.032
8	0.741 ± 0.037	5.00 ± 0.113	1.19 ± 0.075	0.348 ± 0.027	1.62 ± 0.019

Table C-3. Oral Gavage: Female B6C3F1 Mouse 10 mg/kg target dose in water

Scheduled Sacrifice (hr)	Lung wt (g)	Liver wt. (g)	Kidney wt. (g)	Spleen wt. (g)	Brain wt. (g)
Day 1					
0.1	0.137 ± 0.028	0.929 ± 0.049	0.249 ± 0.002	0.059 ± 0.006	0.437 ± 0.034
0.25	0.138 ± 0.010	0.909 ± 0.097	0.243 ± 0.007	0.063 ± 0.006	0.440 ± 0.011
0.5	0.134 ± 0.010	1.008 ± 0.040	0.251 ± 0.015	0.062 ± 0.002	0.436 ± 0.005
1	0.131 ± 0.012	0.940 ± 0.054	0.239 ± 0.015	0.058 ± 0.009	0.429 ± 0.017
Day 3					
0.1	0.149 ± 0.023	0.976 ± 0.075	0.266 ± 0.016	0.059 ± 0.003	0.457 ± 0.006
0.25	0.165 ± 0.041	1.098 ± 0.359	0.244 ± 0.014	0.057 ± 0.003	0.433 ± 0.005
0.5	0.137 ± 0.014	0.946 ± 0.076	0.245 ± 0.006	0.063 ± 0.009	0.437 ± 0.008
1	0.157 ± 0.027	0.888 ± 0.093	0.244 ± 0.012	0.059 ± 0.000	0.431 ± 0.031
Day 5					
0.1	0.141 ± 0.017	1.024 ± 0.088	0.250 ± 0.009	0.057 ± 0.009	0.451 ± 0.018
0.25	0.134 ± 0.016	0.931 ± 0.051	0.264 ± 0.006	0.057 ± 0.005	0.440 ± 0.004
0.5	0.134 ± 0.018	0.991 ± 0.060	0.277 ± 0.005	0.063 ± 0.009	0.447 ± 0.012
1	0.181 ± 0.049	0.940 ± 0.029	0.255 ± 0.009	0.062 ± 0.010	0.444 ± 0.012

Table C-4. Oral Gavage: Female F344 Rat 1.7 mg/kg target dose in water

Scheduled Sacrifice (hr)	Lung wt (g)	Liver wt. (g)	Kidney wt. (g)	Spleen wt. (g)	Brain wt. (g)
Day 1					
0.1	0.685 ± 0.024	5.29 ± 0.046	1.23 ± 0.19	0.362 ± 0.008	1.63 ± 0.031
0.25	0.744 ± 0.044	5.27 ± 0.041	1.14 ± 0.037	0.376 ± 0.006	1.61 ± 0.019
0.5	0.793 ± 0.060	5.59 ± 0.267	1.17 ± 0.11	0.365 ± 0.026	1.59 ± 0.071
1	0.741 ± 0.019	5.23 ± 0.052	1.17 ± 0.044	0.364 ± 0.009	1.61 ± 0.023
Day 3					
0.1	0.811 ± 0.065	5.64 ± 0.318	1.23 ± 0.070	0.373 ± 0.021	1.67 ± 0.022
0.25	0.879 ± 0.080	5.31 ± 0.296	1.26 ± 0.035	0.380 ± 0.016	1.69 ± 0.024
0.5	0.804 ± 0.119	5.33 ± 0.061	1.20 ± 0.063	0.357 ± 0.030	1.66 ± 0.007
1	0.825 ± 0.001	5.43 ± 0.423	1.16 ± 0.07	0.363 ± 0.013	1.69 ± 0.014
Day 5					
0.1	0.817 ± 0.056	5.60 ± 0.375	1.22 ± 0.021	0.374 ± 0.011	1.71 ± 0.010
0.25	0.860 ± 0.072	5.75 ± 0.159	1.25 ± 0.046	0.365 ± 0.012	1.66 ± 0.058
0.5	0.790 ± 0.019	5.45 ± 0.056	1.23 ± 0.030	0.379 ± 0.013	1.70 ± 0.009
1	0.810 ± 0.055	5.75 ± 0.454	1.25 ± 0.045	0.380 ± 0.011	1.68 ± 0.005

Appendix D. Off-Gassing Data

Table D-1. Pilot study for off-gassing of 1,1,2-TCE

Time Post Exposure (hr)	Chamber Conc. (ppb)	Time Post Exposure (hr)	Chamber Conc. (ppb)	Time Post Exposure (hr)	Chamber Conc. (ppb)
0.19	315.6	0.77	255.1	1.36	73.3
0.20	473.9	0.79	271.6	1.37	8.5
0.22	524.3	0.81	253.6	1.39	0.0
0.24	563.0	0.82	186.4	1.41	0.0
0.25	497.1	0.84	188.7	1.43	0.0
0.27	522.3	0.86	243.3	1.44	0.0
0.29	548.8	0.87	227.3	1.46	0.0
0.30	679.0	0.89	258.3	1.48	0.0
0.32	661.4	0.91	212.5	1.49	0.0
0.34	687.5	0.92	192.1	1.51	0.0
0.35	630.7	0.94	170.6	1.53	0.0
0.37	646.3	0.96	176.4	1.54	0.0
0.39	622.3	0.97	225.9	1.56	0.0
0.40	614.1	0.99	204.6	1.58	0.0
0.42	604.1	1.01	73.5	1.59	0.0
0.44	595.5	1.02	43.9	1.61	0.0
0.45	658.5	1.04	153.3	1.63	0.0
0.47	600.2	1.06	126.8	1.64	0.0
0.49	567.1	1.07	93.7	1.66	0.0
0.50	567.1	1.09	80.5	1.68	0.0
0.52	526.9	1.11	44.8	1.69	0.0
0.54	582.6	1.12	97.3	1.71	0.0
0.55	602.9	1.14	90.9	1.73	0.0
0.57	536.6	1.16	57.8	1.74	0.0
0.59	528.1	1.17	87.1	1.76	0.0
0.60	549.0	1.19	40.6	1.78	0.0
0.62	490.9	1.21	1.8	1.79	0.0
0.64	374.2	1.22	47.4	1.81	0.0
0.65	328.3	1.24	48.3	1.83	0.0
0.67	362.7	1.26	72.4	1.84	0.0
0.69	325.2	1.27	28.1	1.86	0.0
0.70	262.8	1.29	30.1	1.88	0.0
0.72	243.0	1.31	12.8	1.89	0.0
0.74	228.9	1.32	45.0	1.91	0.0
0.76	253.5	1.34	91.9	1.93	0.0

Time Post Exposure (hr)	Chamber Conc. (ppb)	Time Post Exposure (hr)	Chamber Conc. (ppb)	Time Post Exposure (hr)	Chamber Conc. (ppb)
1.94	0.0	2.48	0.0	3.02	0.0
1.96	0.0	2.50	0.0	3.03	0.0
1.98	0.0	2.51	0.0	3.05	0.0
1.99	0.0	2.53	0.0	3.07	0.0
2.01	0.0	2.55	0.0	3.08	0.0
2.03	0.0	2.56	0.0	3.10	0.0
2.04	0.0	2.58	0.0	3.12	0.0
2.06	0.0	2.60	0.0	3.13	0.0
2.08	0.0	2.61	0.0	3.15	0.0
2.10	0.0	2.63	0.0	3.17	0.0
2.11	0.0	2.65	0.0	3.18	0.0
2.13	0.0	2.66	0.0	3.20	0.0
2.15	0.0	2.68	0.0	3.22	0.0
2.16	0.0	2.70	0.0	3.23	0.0
2.18	0.0	2.71	0.0	3.25	0.0
2.20	0.0	2.73	0.0	3.27	0.0
2.21	0.0	2.75	0.0	3.28	0.0
2.23	0.0	2.77	0.0	3.30	0.0
2.25	0.0	2.78	0.0	3.32	0.0
2.26	0.0	2.80	0.0	3.33	0.0
2.28	0.0	2.82	0.0	3.35	0.0
2.30	0.0	2.83	0.0	3.37	0.0
2.31	0.0	2.85	0.0	3.38	0.0
2.33	0.0	2.87	0.0	3.40	0.0
2.35	0.0	2.88	0.0	3.42	0.0
2.36	0.0	2.90	0.0	3.44	0.0
2.38	0.0	2.92	0.0	3.45	0.0
2.40	0.0	2.93	0.0	3.47	0.0
2.41	0.0	2.95	0.0	3.49	0.0
2.43	0.0	2.97	0.0	3.50	0.0
2.45	0.0	2.98	0.0		
2.46	0.0	3.00	0.0		

Table D-2. Exposure and Animal information: 1000 ppm

	BW (g)
Mouse # 1	22.9
Mouse # 2	18.5
Mouse # 3	18.7
Mouse # 4	18.9
Mouse # 5	17.8
Avg	19.36
SD	2.02

Start Time	4/12/01 10:04 AM
End exposure	4/12/01 4:04 PM
MS Start Time	4:06:75 PM
MS End Time	1:08 AM
Total	9.02 hr

GC Conditions/Comments

Flow - 2.5 L/min

Generator Temperature 69 C

2 hr into exposure animals lethargic

3 hr extremely lethargic, no coordination.

4 hr - 2 laying on side, shallow, labored breathing

6 hr - all animals slow, shallow, labored breathing, completely unconscious

MS/MS Conditions/Comments Flow 183 ml/min

1 hr post exposure - animals still unconscious

2-3 hr post exposure - animals beginning to become active, still lethargic and uncoordinated

4.5 hr post eposure - 1 animal dead, 1 still unconscious

6 hr post exposure - all living animals lethargic and uncoordinated

Table D-3. Exposure and Animal information: 500 ppm

	BW (g)
Mouse # 1	21.9
Mouse # 2	20.1
Mouse # 3	20.8
Mouse # 4	18.2
Mouse # 5	21.4
Avg	20.48
SD	1.44

Start Time	4/16/01 9:20 AM		
End exposure	4/16/01 1:20 PM		
		Time between Exposure end and MS Start	
MS Start Time	04/16/01 13:23	0:03:45	min
MS End Time	18:23		
MS run	5.01	hr	

GC Conditions/Comments

Flow - 2.5 L/min

10:40 am animals OK

11:20 am - animals lethargic

1:00 pm - 3 lethargic, 2 anesthetized

MS/MS Conditions/Comments Flow 181 ml/min

All animals awake, 2 very slightly uncoordinated

Table D-4. Exposure and Animal information: 250 ppm

	BW (g)
Mouse # 1	17.9
Mouse # 2	20.2
Mouse # 3	20.2
Mouse # 4	20.6
Mouse # 5	19.2
Avg	19.62
SD	1.09

Start Time	4/18/01 9:07 AM		
End exposure	3:07 PM		
		Time between Exposure end and MS Start	
MS Start Time	04/18/01 15:10	02:30	min
MS End Time	20:10		
MS run	5:00	hr	

GC Conditions/Comments

Flow - 2.5 L/min

MS/MS Conditions/Comments Flow 179 ml/min

Table D-5. Off-Gassing: 6 hr inhalation to 1000 ppm 1,1,2-TCE

Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)
0.05	37.1	0.71	40.3	1.71	42.3
0.07	40.1	0.74	42.7	1.74	47.3
0.08	30.3	0.75	40.9	1.77	45.5
0.09	31.6	0.77	43.2	1.80	43.8
0.11	34.7	0.78	45.0	1.84	45.1
0.12	34.9	0.80	48.4	1.87	45.6
0.13	33.3	0.82	49.4	1.90	43.2
0.15	32.2	0.84	49.6	1.93	42.8
0.16	32.1	0.85	45.4	1.97	43.0
0.17	31.6	0.87	47.6	2.01	43.8
0.18	32.0	0.88	43.4	2.05	47.4
0.20	31.5	0.90	41.5	2.10	44.8
0.21	32.9	0.92	41.4	2.15	40.3
0.22	32.9	0.93	43.1	2.20	41.9
0.24	31.9	0.94	43.1	2.24	45.4
0.25	30.3	0.95	42.9	2.29	39.2
0.25	31.1	0.97	42.0	2.34	40.6
0.26	30.0	0.99	39.6	2.39	42.1
0.27	32.5	1.02	37.8	2.43	44.0
0.27	33.4	1.05	37.5	2.48	51.5
0.28	33.7	1.08	39.3	2.53	54.7
0.28	33.5	1.12	40.8	2.58	53.6
0.29	34.2	1.15	40.5	2.62	57.0
0.31	32.3	1.18	42.6	2.67	56.4
0.33	30.9	1.22	43.9	2.72	58.2
0.36	31.5	1.25	39.1	2.76	60.9
0.38	34.4	1.28	39.3	2.81	65.9
0.41	37.1	1.31	37.5	2.86	73.9
0.43	38.1	1.35	38.5	2.91	63.3
0.46	37.9	1.38	39.7	2.95	59.1
0.48	38.7	1.41	37.2	3.00	61.7
0.51	37.1	1.44	35.5	3.05	60.4
0.54	41.1	1.48	37.4	3.10	59.4
0.56	45.5	1.51	36.7	3.14	58.3
0.59	43.4	1.54	36.1	3.19	57.8
0.61	41.5	1.58	38.9	3.24	58.6
0.64	40.4	1.61	42.3	3.29	60.7
0.66	37.8	1.64	41.7	3.33	70.3
0.69	38.8	1.67	42.5	3.38	72.5

Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)
3.43	73.1	5.11	46.7	6.79	26.6
3.47	68.4	5.16	51.0	6.84	25.4
3.52	70.5	5.20	49.9	6.88	25.6
3.56	75.6	5.24	50.4	6.92	26.3
3.60	73.4	5.28	45.2	6.96	24.9
3.64	72.9	5.32	48.3	7.00	26.2
3.69	75.1	5.37	47.2	7.05	26.4
3.73	69.9	5.41	44.3	7.09	24.6
3.77	70.2	5.45	43.5	7.13	25.2
3.81	63.8	5.49	41.2	7.17	25.1
3.85	65.3	5.53	38.3	7.21	23.6
3.90	68.6	5.58	42.9	7.26	23.4
3.94	71.0	5.62	43.3	7.30	22.5
3.98	71.4	5.66	43.2	7.34	21.8
4.02	69.5	5.70	41.0	7.38	20.4
4.06	67.9	5.74	39.6	7.42	21.0
4.11	66.0	5.79	39.9	7.47	21.4
4.15	60.5	5.83	39.1	7.51	21.2
4.19	59.6	5.87	38.1	7.55	20.9
4.23	64.1	5.91	40.0	7.59	20.0
4.27	60.2	5.95	39.4	7.63	18.6
4.32	59.4	6.00	38.5	7.68	17.7
4.36	63.0	6.04	38.0	7.72	17.0
4.40	66.1	6.08	36.0	7.76	16.3
4.44	63.1	6.12	35.3	7.80	15.3
4.48	66.5	6.16	35.3	7.84	15.1
4.53	65.9	6.21	34.4	7.89	14.4
4.57	57.5	6.25	33.6	7.93	13.8
4.61	60.4	6.29	32.4	7.97	13.3
4.65	64.3	6.33	32.2	8.01	12.9
4.69	59.9	6.37	33.8	8.05	14.6
4.74	60.9	6.42	33.5	8.12	16.8
4.78	59.8	6.46	30.1	8.18	15.3
4.82	56.1	6.50	32.6	8.24	14.5
4.86	53.9	6.54	29.9	8.31	12.7
4.90	49.7	6.58	30.2	8.37	10.9
4.95	49.2	6.63	31.2	8.44	9.4
4.99	49.4	6.67	32.2	8.50	8.2
5.03	47.6	6.71	29.1	8.57	7.6
5.07	46.8	6.75	28.0	8.63	8.1

Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)
8.70	9.1	8.83	8.7	8.96	7.5
8.76	9.3	8.89	8.0	9.02	7.3

Table D-6. Off-Gassing: 4 hr inhalation to 500 ppm 1,1,2-TCE

Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)
0.09	13.31	0.74	7.30	1.39	5.92
0.10	15.24	0.75	7.49	1.40	5.99
0.12	16.78	0.77	7.16	1.42	6.03
0.14	17.63	0.79	6.84	1.44	5.93
0.15	17.14	0.80	7.27	1.45	5.52
0.17	15.11	0.82	7.83	1.47	4.93
0.19	13.86	0.84	7.83	1.49	4.52
0.20	13.37	0.85	7.55	1.50	4.12
0.22	13.03	0.87	6.92	1.52	4.10
0.24	12.97	0.89	6.82	1.54	4.28
0.25	12.57	0.90	7.31	1.55	4.37
0.27	12.23	0.92	7.15	1.57	4.64
0.29	11.99	0.94	6.91	1.59	4.93
0.30	11.82	0.95	7.06	1.60	5.08
0.32	12.03	0.97	7.35	1.62	4.94
0.34	11.89	0.99	7.02	1.64	4.83
0.35	11.57	1.00	6.31	1.65	5.01
0.37	11.61	1.02	6.10	1.67	5.02
0.39	11.46	1.04	6.38	1.69	4.49
0.40	11.30	1.05	6.38	1.70	4.10
0.42	11.00	1.07	5.89	1.72	3.99
0.44	10.61	1.09	6.10	1.74	3.93
0.45	10.40	1.10	6.69	1.75	3.86
0.47	10.36	1.12	6.62	1.77	3.97
0.49	10.66	1.14	6.45	1.79	4.05
0.50	10.34	1.15	6.71	1.80	3.81
0.52	9.88	1.17	7.24	1.82	3.46
0.54	9.85	1.19	7.29	1.84	3.20
0.55	9.85	1.20	7.37	1.85	3.24
0.57	9.48	1.22	7.77	1.87	3.35
0.59	8.97	1.24	7.47	1.89	3.41
0.60	9.08	1.25	6.69	1.90	3.73
0.62	8.90	1.27	6.57	1.92	4.01
0.64	8.25	1.29	6.07	1.94	4.04
0.65	8.08	1.30	5.28	1.95	4.09
0.67	8.39	1.32	5.16	1.97	4.37
0.69	8.81	1.34	5.07	1.99	4.51
0.70	8.38	1.35	4.95	2.00	4.57
0.72	7.56	1.37	5.33	2.02	4.54

Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)
2.04	4.27	2.71	2.17	3.37	1.22
2.05	3.95	2.72	2.04	3.39	1.16
2.07	3.82	2.74	2.09	3.41	1.18
2.09	3.71	2.76	2.09	3.42	1.21
2.10	3.48	2.77	2.08	3.44	1.18
2.12	3.50	2.79	2.15	3.46	1.11
2.14	3.70	2.81	2.12	3.47	1.16
2.15	3.65	2.82	1.92	3.49	1.23
2.17	3.51	2.84	1.75	3.51	1.17
2.19	3.62	2.86	1.74	3.52	1.16
2.20	3.55	2.87	1.66	3.54	1.16
2.22	3.25	2.89	1.65	3.56	1.09
2.24	3.17	2.91	1.75	3.57	1.06
2.25	3.12	2.92	1.92	3.59	1.00
2.27	3.10	2.94	1.96	3.61	0.96
2.29	3.04	2.96	1.88	3.62	0.91
2.30	3.11	2.97	1.76	3.64	0.87
2.32	3.07	2.99	1.68	3.66	0.94
2.34	2.87	3.01	1.59	3.67	1.03
2.35	2.81	3.02	1.65	3.69	1.00
2.37	2.84	3.04	1.75	3.71	0.96
2.39	2.95	3.06	1.73	3.72	0.91
2.40	2.91	3.07	1.77	3.74	0.84
2.42	2.87	3.09	1.68	3.76	0.75
2.44	2.85	3.11	1.64	3.77	0.69
2.45	2.75	3.12	1.67	3.79	0.68
2.47	2.74	3.14	1.56	3.81	0.71
2.49	2.78	3.16	1.36	3.82	0.74
2.50	2.56	3.17	1.35	3.84	0.72
2.52	2.44	3.19	1.37	3.86	0.74
2.54	2.61	3.21	1.25	3.87	0.76
2.55	2.86	3.22	1.18	3.89	0.77
2.57	2.89	3.24	1.19	3.91	0.76
2.59	2.79	3.26	1.22	3.92	0.73
2.60	2.75	3.27	1.22	3.94	0.73
2.62	2.63	3.29	1.32	3.96	0.74
2.64	2.45	3.31	1.30	3.97	0.76
2.65	2.22	3.32	1.21	3.99	0.71
2.67	1.92	3.34	1.22	4.01	0.72
2.69	2.03	3.36	1.22	4.02	0.76

Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)
4.04	0.70	4.37	0.50	4.71	0.41
4.06	0.61	4.39	0.49	4.72	0.43
4.07	0.59	4.41	0.49	4.74	0.41
4.09	0.61	4.42	0.54	4.76	0.43
4.11	0.59	4.44	0.54	4.77	0.46
4.12	0.59	4.46	0.52	4.79	0.45
4.14	0.59	4.47	0.50	4.81	0.42
4.16	0.57	4.49	0.50	4.82	0.46
4.17	0.59	4.51	0.48	4.84	0.47
4.19	0.60	4.52	0.41	4.86	0.41
4.21	0.59	4.54	0.38	4.87	0.40
4.22	0.53	4.56	0.42	4.89	0.42
4.24	0.53	4.57	0.44	4.91	0.40
4.26	0.56	4.59	0.44	4.92	0.34
4.27	0.54	4.61	0.40	4.94	0.31
4.29	0.52	4.62	0.37	4.96	0.31
4.31	0.52	4.64	0.39	4.97	0.30
4.32	0.54	4.66	0.39	4.99	0.30
4.34	0.52	4.67	0.37	5.01	0.23
4.36	0.48	4.69	0.37		

Table D-7. Off-Gassing: 5 hr inhalation to 250 ppm 1,1,2-TCE

Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)
0.06	5.359	0.72	1.364	1.37	0.499
0.08	5.710	0.73	1.321	1.38	0.508
0.10	5.905	0.75	1.272	1.40	0.537
0.11	6.067	0.77	1.258	1.42	0.521
0.13	5.468	0.78	1.119	1.43	0.486
0.15	4.361	0.80	1.030	1.45	0.477
0.16	3.835	0.82	1.017	1.47	0.459
0.18	3.546	0.83	1.014	1.48	0.449
0.20	3.430	0.85	1.095	1.50	0.457
0.21	3.292	0.87	1.102	1.52	0.449
0.23	3.177	0.88	1.043	1.53	0.455
0.25	3.114	0.90	0.996	1.55	0.452
0.26	3.042	0.92	0.924	1.57	0.446
0.28	2.904	0.93	0.945	1.58	0.444
0.30	2.755	0.95	0.954	1.60	0.473
0.31	2.653	0.97	0.957	1.62	0.470
0.33	2.526	0.98	0.896	1.63	0.429
0.35	2.415	1.00	0.808	1.65	0.401
0.36	2.396	1.02	0.822	1.67	0.388
0.38	2.358	1.03	0.801	1.68	0.352
0.40	2.311	1.05	0.736	1.70	0.360
0.41	2.262	1.07	0.718	1.72	0.375
0.43	2.218	1.08	0.754	1.73	0.363
0.45	2.174	1.10	0.755	1.75	0.329
0.47	2.055	1.12	0.740	1.77	0.339
0.48	1.901	1.13	0.749	1.78	0.362
0.50	1.828	1.15	0.726	1.80	0.331
0.52	1.788	1.17	0.662	1.82	0.343
0.53	1.729	1.18	0.675	1.83	0.340
0.55	1.654	1.20	0.692	1.85	0.328
0.57	1.627	1.22	0.613	1.87	0.323
0.58	1.555	1.23	0.622	1.88	0.331
0.60	1.463	1.25	0.661	1.90	0.304
0.62	1.415	1.27	0.700	1.92	0.295
0.63	1.410	1.28	0.657	1.93	0.313
0.65	1.358	1.30	0.598	1.95	0.262
0.67	1.326	1.32	0.553	1.97	0.259
0.68	1.430	1.33	0.544	1.98	0.305
0.70	1.446	1.35	0.520	2.00	0.295

Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)
2.02	0.250	2.69	0.209	3.35	0.115
2.03	0.240	2.70	0.236	3.37	0.126
2.05	0.295	2.72	0.209	3.39	0.126
2.07	0.290	2.74	0.192	3.40	0.116
2.08	0.230	2.75	0.208	3.42	0.119
2.10	0.223	2.77	0.221	3.44	0.140
2.12	0.268	2.79	0.228	3.45	0.175
2.13	0.267	2.80	0.192	3.47	0.163
2.15	0.228	2.82	0.184	3.49	0.135
2.17	0.225	2.84	0.203	3.50	0.120
2.18	0.252	2.85	0.189	3.52	0.090
2.20	0.276	2.87	0.172	3.54	0.113
2.22	0.255	2.89	0.181	3.55	0.189
2.23	0.235	2.90	0.166	3.57	0.201
2.25	0.242	2.92	0.159	3.59	0.183
2.27	0.235	2.94	0.152	3.60	0.192
2.28	0.247	2.95	0.186	3.62	0.185
2.30	0.285	2.97	0.193	3.64	0.130
2.32	0.263	2.99	0.173	3.65	0.104
2.33	0.253	3.00	0.198	3.67	0.112
2.35	0.252	3.02	0.195	3.69	0.124
2.37	0.230	3.04	0.177	3.70	0.117
2.38	0.222	3.05	0.168	3.72	0.137
2.40	0.217	3.07	0.148	3.74	0.143
2.42	0.252	3.09	0.139	3.75	0.141
2.43	0.255	3.10	0.153	3.77	0.145
2.45	0.242	3.12	0.176	3.79	0.149
2.47	0.256	3.14	0.187	3.80	0.143
2.48	0.248	3.15	0.177	3.82	0.130
2.50	0.216	3.17	0.179	3.84	0.137
2.52	0.209	3.19	0.196	3.85	0.128
2.53	0.242	3.20	0.237	3.87	0.139
2.55	0.237	3.22	0.213	3.89	0.165
2.57	0.212	3.24	0.162	3.90	0.164
2.58	0.213	3.25	0.166	3.92	0.156
2.60	0.214	3.27	0.170	3.94	0.127
2.62	0.233	3.29	0.146	3.95	0.114
2.63	0.251	3.30	0.140	3.97	0.099
2.65	0.238	3.32	0.117	3.99	0.084
2.67	0.205	3.34	0.093	4.00	0.096

Time Post Exposure (hr)	Chamber Conc. (ppm)	Time Post Exposure (hr)	Chamber Conc. (ppm)
4.02	0.117	4.69	0.031
4.04	0.159	4.70	0.043
4.05	0.185	4.72	0.065
4.07	0.157	4.74	0.072
4.09	0.105	4.75	0.082
4.10	0.112	4.77	0.119
4.12	0.119	4.79	0.096
4.14	0.127	4.80	0.077
4.15	0.098	4.82	0.080
4.17	0.101	4.84	0.070
4.19	0.124	4.86	0.050
4.20	0.107	4.87	0.057
4.22	0.114	4.89	0.072
4.24	0.140	4.91	0.084
4.25	0.151	4.92	0.083
4.27	0.126	4.94	0.052
4.29	0.133	4.96	0.057
4.30	0.131		
4.32	0.115		
4.34	0.094		
4.35	0.115		
4.37	0.123		
4.39	0.138		
4.40	0.088		
4.42	0.028		
4.44	0.067		
4.45	0.093		
4.47	0.087		
4.49	0.053		
4.50	0.095		
4.52	0.108		
4.54	0.092		
4.55	0.071		
4.57	0.083		
4.59	0.096		
4.60	0.110		
4.62	0.097		
4.64	0.077		
4.65	0.088		
4.67	0.055		

Appendix E: Partition Coefficients

Table E-1. Time and volume determination using rat blood.

Incubation Time (hr)	Sample Volume (g)	Partition Coefficient	Average
1	0.500	58.0	
1	0.498	46.1	52.0
1	1.020	57.5	
1	1.036	50.1	53.8
1	2.030	47.8	
1	2.010	53.9	
1	2.010	53.9	51.9 ± 3.53
3	0.500	54.6	
3	0.500	50.3	
3	0.497	50.2	51.7 ± 2.52
3	1.02	54.1	
3	1.036	61.7	
3	1.030	55.1	56.9 ± 4.17

Table E-2. Blood:Air Partition Coefficient: Female B6C3F1 Mouse Blood

Sample	Volume (g)	Partition Coefficient	Average
1	0.509	82.8	
2	0.502	63.1	
3	0.509	73.0	
4	0.501	76.0	
5	0.498	61.5	
6	0.502	69.9	71.0 $\pm$ 8.03
Pool A	1.017	65.1	
Pool B	1.026	74.3	
Pool C	1.009	66.9	68.7 $\pm$ 4.87

Note: The blood from 4 extra animals was pooled with left-over blood from the original 6 animals, and partition coefficients determined in 1 ml volumes of the pooled blood.