

- m in downtown and industrial areas, respectively(4). Propane was detected in Atlanta, GA in 1992 with an average concentration of 38.8 ppb(5). Propane was detected in Hamburg, Germany (1988), Sydney, Australia (1982), Chicago, IL (1989), Osaka, Japan (1993) and Athens, Greece (1996) at average concentrations of 2.1, 5.9, 3.1, 8.9, 1.2 ppbv(6). [Peer reviewed] [(1) Ding WH, Wang JL; Chemosphere 37: 1187-1195 (1998) (2) Spicer CW et al; Atmos Environ 19: 929-936 (1996) (3) Thijssse TR et al; J Air Waste Management Assoc 49: 1394-1404 (1999) (4) Cheng L et al; Atmos Environ 31: 239-246 (1997) (5) Bernardo-Bricker A et al; Air Waste Management 45: 591-603 (1995) (6) Moschonas N, Glavas S; Atmos Environ 30: 2769-2772 (1996)]
9. **INDOOR:** The average propane concn in the air at the 6th floor of the Cooper Union Building in New York City, NY was 9, 9 and 4 ppbC for 19, 12 and 10 samples taken at 6:00-9:00 AM, 9:00-11:00 AM and 1:00-3:00 PM, respectively in July 1978(1). The average propane concn in the air at the 82nd floor of the Empire State Building in New York City, NY was 4, 6 and 4 ppbC for 18, 21 and 17 samples taken at 6:00-9:00 AM, 9:00-11:00 AM and 1:00-3:00 PM, respectively, in July 1978(1). Propane was detected at an average concn of 14.8 ug/cu m for 5 samples collected at the 82nd floor of the World Trade Center in New York City, NY between 5:00 AM - 5:30 PM Aug 23, 1977(2). [Peer reviewed] [(1) Altwicker ER et al; J Geophys Res 85: 7475-87 (1980) (2) Altwicker ER, Whitby RA; Sampling, Sample Prep and Measurement of Specific Non-methane Hydrocarbons 72 Ann Meet Air Pollut Contr Asssoc (1979)]
 10. **RURAL:** At a rural site near Duren, Germany, the atmospheric propane concn was 2.8 ppb for March 1984(1). The respective median, minimum and maximum atmospheric concn of propane for 5 rural locations in NC ranged from 3.4 to 8.6, 2.0 to 6.4, and 4.4 to 14.4 ppb (2). The atmospheric concn of propane for Jones State Forest, TX ranged from 12.8 to 34.9 ppb with an average of 21.8 ppb for 10 samples(3). According to the National Ambient Volatile Organic Compounds (VOCs) Database, the median rural atmospheric concn of propane is 1.076 ppbV for 36 samples(4). The arithmetic and geometric means were 10.3 and 6.6 ppbC, respectively, for the atmospheric propane content at rural locations in New England(5). [Peer reviewed] [(1) Rudolph J, Khedim A; Int J Environ Anal Chem 290: 265-82 (1985) (2) Seila RL et al; Atmospheric Volatile Hydrocarbon Composition at Five Remote Sites in NW NC, USEPA-600/D-84-092 (1984) (3) Seila RL; Non-urban Hydrocarbons Concn in Ambient Air No of Houston TX USEPA-500/3-79-010 p38 (1979) (4) Shah JJ, Heyerdahl EK; National Ambient VOC Database Update USEPA 600/3-88/010 (1988) (5) Colbeck I, Harrison RM; Atmos Environ 19: 1899-904 (1985)]
 11. **REMOTE:** According to the National Ambient Volatile Organic Compounds (VOCs) Database, the median remote atmospheric concn of propane is 0.439 ppbV for 10 samples (1). For 9 samples collected over a 30 hour period, the average propane concn in the Smokey Mountains, NC was 8.1 ppbC with a range from 5.0 to 13.3 ppbC(2). On Aug 27, 1976, the average propane concn for air over Lake Michigan at altitudes of 2000, 2500 and 3000 ft was 9.7 ppbV(3). On Aug 28, 1976, the average propane concn for air over Lake Michigan at altitudes of 1000 and 1500 ft was 1.3 ppbV(3). The air over the Norwegian Arctic had an average propane concn for 5 samples from Bear Island, 2 from Hopen and 2 from Spitsbergen of 87.1 parts per trillion/volume in July 1982 and 2156 parts per trillion/volume in the spring of 1983(4). All 27 air samples from the intertropical Indian Ocean contained propane at concn ranging from 0.10 to 0.76 ppbV(5). On April 20 to May 10, 1980, during the French research flight of Stratoz II, the mixing ratio of propane at altitudes between 800 and 200 mb was measured to range from less than 0.05 and 1.0 ppb for 110 samples of air collected between latitudes of 60 deg N and 60 deg S(6). [Peer reviewed] [(1) Shah JJ, Heyerdahl EK; National Ambient VOC Database Update USEPA-600/3-88/010 (1988) (2) Arnts RR, Meeks SA; Atmos Environ 15: 1643-51 (1981) (3) Miller MM, Alkezweeny AJ; Ann NY Acad Sci 338: 219-32 (1980) (4) Hov O et al; Geophys Res Lett 11: 425-8 (1984) (5) Bonsang B et al; J Atmos Chem 6: 3-20 (1988) (6) Ehhalt DH et al; J Atmos Chem 3: 29-52 (1985)]
 12. **RURAL/REMOTE:** Propane was detected in rural south Norway at concentrations ranging 2.01-7.74 ppb(1). Forest hydrocarbon emissions near Baton Rouge Louisiana had

background propane levels ranging from 5–35 ppbV(2). In the late 1980s Canadian and Norwegian arctic contained propane levels of 288 parts per trillion by volume and 2474 parts per trillion/volume, respectively(3). Propane was detected in concentrations ranging from 0.16–1.77 ppbV during Nov 1990 to Dec 1991 in Kenjimbukujik National Park, Nova Scotia, Canada(4). [Peer reviewed] [(1) Hov O et al; Atmos Environ Part A 25: 1981–1999 (1991) (2) Khalil MAK, Rasmussen RA; J. Air Waste Management Assoc 42: 810–813 (1992) (3) Kirschstetter TW et al; Environ Sci Technol 30: 661–670 (1996) (4) Bottenheim JW, Shepherd MF; Atmos Environ 29: 647–664 (1995)]

13. SOURCE DOMINATED: According to the National Ambient Volatile Organic Compounds (VOCs) Database, the median source dominated and indoor atmospheric concn of propane are 6.483 ppbV for 54 samples, respectively(1). A Texaco refinery located in Tulsa, OK was attributed with emissions to the surrounding atmosphere where the propane concn was measured to be 95.5 and 189.8 ppbC for two min before and after 1:33 PM(2). The propane content of the air downwind of a Mobil natural gas facility in Rio Blanco, CO was 465.3 ppbC(2). The arithmetic and geometric means were 20.4 and 14.9 ppbC, respectively, for the atmospheric propane content at polluted rural locations in New England(3). [Peer reviewed] [(1) Shah JJ, Heyerdahl EK; National Ambient VOC Database Update USEPA 600/3– 88/010 (1988) (2) Arnts RR, Meeks SA; Atmos Environ 15: 1643–51 (1981) (3) Colbeck I, Harrison RM; Atmos Environ 19: 1899–904 (1985)]
14. SOURCE DOMINATED: Trace amounts of propane were detected in emissions from municipal landfill sanitary sites(1). Emissions from a catalytic cracking refinery contained 8.9–38.3 ug/cu m in 1992(2). Propane is released from burning fireplace hard and softwood as well as hard stovewood in concentrations of 107.43, 167.84 and 155.06 mg/kg (3). In 1990 propane comprised 0.53% of UK volatile emissions based on mass(4). [Peer reviewed] [(1) Brosseau J, Heitz M; Atmos Environ 28: 285–293 (1994) (2) Ostermark U; Chemosphere 30: 1813–1817 (1995) (3) McDonald JD et al; Environ Sci Technol 34: 2080–2091 (2000) (4) Derwent RG; Volatile Organic Compounds in the Atmosphere. Issues in Environ Sci Technol. No 4, Royal Society of Chemistry, Cambridge UK pp 1–15 (1995)]

Food Survey Values:

Propane was detected in emissions during hamburger meat charbroiling at a concentration of 190,000 ug/kg(1). [Peer reviewed] [(1) Schauer JJ et al; Environ Sci Technol 33: 1566–1577 (1999)]

Milk Concentrations:

ENVIRONMENTAL: Propane was detected in 1 of 12 samples of mothers breast milk from the cities of Bayonne NJ, Jersey City NJ, Bridgeville, PA and Baton Rouge, LA(1). [Peer reviewed] [(1) Pellizzari ED et al; Bull Environ Contam Toxicol 28: 322–8 (1982)]

HUMAN EXPOSURE ▲

Probable Routes of Human Exposure:

1. Inhalation, skin and eye contact by liquid. [Peer reviewed] [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985. 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985., p. 748]
2. NIOSH (NOES Survey 1981–1983) has statistically estimated that 2,071,479 workers (528,348 of these are female) are potentially exposed to propane in the US(1). Occupational exposure to propane may occur through inhalation and dermal contact with this compound at workplaces where propane is produced or used. Propane is widely detected in air(SRC). The most likely pathway by which the general public is exposed to

propane is by inhalation due to the release of this substance from natural gas, natural gas food grills, and crude oil emissions. Monitoring data also indicate that the general population may be exposed to propane via ingestion of food and drinking water, although these pathways are considered minor when compared to inhalation(SRC). [Peer reviewed] [(1) NIOSH; NOES. National Occupational Exposure Survey conducted from 1981–1983. Estimated numbers of employees potentially exposed to specific agents by 2–digit standard industrial classification (SIC). Available at <http://www.cdc.gov/noes/> as of Oct 24, 2006.]

3. The most probable route of human exposure to propane is by inhalation(SRC). Atmospheric workplace exposures have been documented(1–3). Propane is a highly volatile compound and monitoring data indicates that it is a widely occurring atmospheric pollutant(SRC). [Peer reviewed] [(1) Rappaport SM et al; *Appl Ind Hyg* 2: 148–54 (1987) (2) Kearney CA, Dunham DB; *Am Ind Hyg Assoc J* 47: 535–9 (1986) (3) Halder CA et al; *Am Ind Hyg Assoc J* 47: 164–72 (1986)]

Body Burdens:

Propane was detected in 1 of 12 samples of mothers breast milk from the cities of Bayonne NJ, Jersey City NJ, Bridgeville PA and Baton Rouge LA(1). [Peer reviewed] [(1) Pellizzari ED et al; *Bull Environ Contam Toxicol* 28: 322–8 (1982)]

8.0 EXPOSURE STANDARDS AND REGULATIONS

STANDARDS AND REGULATIONS ▲

Immediately Dangerous to Life or Health: 2100 ppm [Based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.] [Peer reviewed] [NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005–151 (2005), p.]

Allowable Tolerances:

1. Residues of propane are exempted from the requirement of a tolerance when used as a propellant in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. [Peer reviewed] [40 CFR 180.910; U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from: <http://www.gpoaccess.gov/ecfr> as of August 30, 2006]
2. Residues of propane are exempted from the requirement of a tolerance when used as a propellant in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals. [Peer reviewed] [40 CFR 180.930; U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from: <http://www.gpoaccess.gov/ecfr> as of August 30, 2006]

OCCUPATIONAL PERMISSIBLE LEVELS ▲

OSHA Standards:

Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 1000 ppm (1800 mg/cu m). [Peer reviewed] [29 CFR 1910.1000; U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from:

<http://www.gpoaccess.gov/ecfr> as of August 30, 2006]

NIOSH Recommendations: Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 1000 ppm (1800 mg/cu m). [Peer reviewed] [NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005), p.]

Threshold Limit Values:

1. 8 hr Time Weighted Avg (TWA): 1000 ppm. /Aliphatic hydrocarbon gases [C1-C4]/ [Peer reviewed] [American Conference of Governmental Industrial Hygienists. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati, OH 2006, p. 11]
2. Excursion Limit Recommendation: Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a work day, and under no circumstances should they exceed 5 times the TLV-TWA, provided that the TLV-TWA is not exceeded. [Peer reviewed] [American Conference of Governmental Industrial Hygienists. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati, OH 2006, p. 5]

OTHER STANDARDS AND REGULATIONS ▲

FIFRA Requirements:

1. Residues of propane are exempted from the requirement of a tolerance when used as a propellant in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. [Peer reviewed] [40 CFR 180.910; U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from: <http://www.gpoaccess.gov/ecfr> as of August 30, 2006]
2. Residues of propane are exempted from the requirement of a tolerance when used as a propellant in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals. [Peer reviewed] [40 CFR 180.930; U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from: <http://www.gpoaccess.gov/ecfr> as of August 30, 2006]

FDA Requirements:

1. Substance added directly to human food affirmed as generally recognized as safe (GRAS). [Peer reviewed] [21 CFR 184.1655; U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from: <http://www.gpoaccess.gov/ecfr> as of August 30, 2006]
2. Propane used as a general purpose food additive in animal drugs, feeds, and related products is generally recognized as safe when used in accordance with good manufacturing or feeding practice. [Peer reviewed] [21 CFR 582.1655; U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from: <http://www.gpoaccess.gov/ecfr> as of August 30, 2006]

9.0 MONITORING AND ANALYSIS METHODS

Sampling Procedures:

Air pollution with petroleum vapors was determined with portable gas analyzers calibrated with methane & propane. [Peer reviewed] [ESIPOVA IF, DENSHCHIKOV FN; TRANSP KHRANENIE NEFTI NEFTEPROD (2): 24-7 (1979)]

Analytical Laboratory Methods:

1. ... A hydrocarbon fast-response gas sensor has been developed to measure propane in liquefied natural gas spills. [Peer reviewed] [Bingham, E.; Cohrssen, B.; Powell, C.H.; Patty's Toxicology Volumes 1-9 5th ed. John Wiley & Sons. New York, N.Y. (2001), p. 4:10]
2. NIOSH S87: Propane vapor present in atmosphere is measured directly by drawing air sample into combustible gas meter /MSA model 40/ properly calibrated ... meter reading is recorded & equivalent concn in ppm is read off the calibration curve. Method ... validated over range of 481-2,016 ppm at 20.5 deg c & 760 mm Hg ... [Peer reviewed] [U.S. Department of Health, Education Welfare, Public Health Service. Center for Disease Control, National Institute for Occupational Safety Health. NIOSH Manual of Analytical Methods. 2nd ed. Volumes 1-7. Washington, DC: U.S. Government Printing Office, 1977-present., p. V2 S87-1]

10.0 ADDITIONAL REFERENCES**Special Reports:**

European Chemicals Bureau; IUCLID Dataset, Propane (74-98-6) (2000 CD-ROM edition). Information on usage patterns, toxicology, and environmental effects submitted by industry to the European Union. Available from the database query page: <http://ecb.jrc.it/esis/esis.php> as of October 13, 2006.

Prior History of Accidents:

On April 9, 1998, at approximately 11:28 pm, an 18,000-gallon propane tank exploded at the Herrig Brothers Feather Creek Farm (the farm) in Albert City, Iowa. The blast occurred less than half an hour after an all-terrain vehicle (ATV), driven by a minor without the owner's permission, damaged two above-ground propane pipes and a fire resulting from that accident engulfed the tank. The explosion that occurred at the farm is known as a Boiling Liquid Expanding Vapor Explosion or BLEVE. Tank fragments produced by the BLEVE killed two volunteer fire fighters. In addition, seven other emergency response personnel were injured, and several buildings were damaged by the blast. ... The propane storage and handling system was installed at the farm in 1988. When the tank system was installed, Iowa law provided that the 1979 edition of the National Fire Protection Association's Standard for the Storage and Handling of Liquefied Petroleum Gases (NFPA 58) governed the installation. ... The propane system at the farm did not comply with NFPA 58 in two significant respects that contributed to the incident: Above ground piping was not protected from potential damage from vehicles, and the liquid propane outlet pipe downstream from an excess flow valve was too narrow in diameter. Fire fighter training for responding to BLEVEs was /also/ inadequate. Some training materials provided to the fire fighters led them to believe that they would be protected from a propane tank explosion by positioning themselves to the sides of the tank and by avoiding the areas extending from the two ends of the tank. As a consequence, fire fighters were positioned too close to the sides of the burning propane storage tank when it exploded. ... A contributing cause /was that/ ... the State Fire Marshal should have received a plan of the farm's propane system prior to its installation in 1988. The State Fire Marshal had no record of the farm's system, however. Iowa law did not specifically designate which party — the owner or the installer of a large propane tank facility — was required to notify the State Fire Marshal. In addition, the State Fire Marshal did not have a program in place to adequately monitor or inspect large propane storage facilities. [Peer reviewed] [U.S. Chemical Safety And Hazard Investigation Board. Herrig Brothers Propane Tank Explosion Albert City, Iowa April 9, 1998. 66 p. Available at

http://www.csb.gov/completed_investigations/docs/Final%20Herrig.pdf as of
November 22, 2006]

I U C L I D

D a t a s e t

Existing Chemical	Substance ID: 74-98-6
CAS No.	74-98-6
EINECS Name	propane liquefied
EINECS No.	200-827-9
Molecular Formula	C3H8

Dataset created by: EUROPEAN COMMISSION - European Chemicals Bureau

This dossier is a compilation based on data reported by the European Chemicals Industry following 'Council Regulation (EEC) No. 793/93 on the Evaluation and Control of the Risks of Existing Substances'. All (non-confidential) information from the single datasets, submitted in the IUCLID/HEDSET format by individual companies, was integrated to create this document.

The data have not undergone any evaluation by the European Commission.

Creation date: 19-FEB-2000

Number of Pages: 137

Chapters: all

Edition: Year 2000 CD-ROM edition

Flags: non-confidential

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European Chemicals Bureau

5.1 Acute Toxicity**5.1.1 Acute Oral Toxicity**

-

5.1.2 Acute Inhalation Toxicity

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 15 minute(s)
Value: > 800000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 GLP: no data
Test substance: other TS
Remark: Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of propane in air for 15 minutes. Where deaths occurred, they were during, not after, exposure and were associated with depressant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Compañia Española de Petroleos CEPESA Madrid
Test substance: Propane, CAS No. 74-98-6 (127)

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 15 minute(s)
Value: 570000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 GLP: no data
Test substance: other TS
Remark: Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of isobutane in air for 15 minutes. Where deaths occurred, they were during, not after, exposure and were associated with stimulant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Compañia Española de Petroleos CEPESA Madrid
Test substance: Isobutane, CAS No. 75-28-5 (127)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 4 hour(s)
Value: 658 mg/l
Method: other: procedure as detailed in paper by Shugaev (see Reference).
Year: 1969 **GLP:** no data
Test substance: other TS
Remark: Rats were exposed to a range of butane concentrations in air for 4 hours. Following exposure, hydrocarbon accumulation in several organs was determined.

n-Butane is partially absorbed by rat tissue and partly transferred to brain, kidney, liver and perinephric adipose tissue.
Source: Compañia Española de Petroleos CEPSA Madrid
Test substance: n-Butane, CAS No. 106-97-8

(128)

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 15 minute(s)
Value: > 800000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of propane in air for 15 minutes. Where deaths occurred, they were during, not after, exposure and were associated with depressant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Texaco Ltd Pembroke-Dyfed
Test substance: Propane, CAS No. 74-98-6

(129)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 15 minute(s)
Value: 570000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of isobutane in air for 15 minutes. Where deaths occurred, they were during, not after, exposure and were associated with stimulant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Texaco Ltd Pembroke-Dyfed
Test substance: Isobutane, CAS No. 75-28-5

(129)

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 4 hour(s)
Value: 658 mg/l
Method: other: procedure as detailed in paper by Shugaev (see Reference).
Year: 1969 **GLP:** no data
Test substance: other TS
Remark: Rats were exposed to a range of butane concentrations in air for 4 hours. Following exposure, hydrocarbon accumulation in several organs was determined.

n-Butane is partially absorbed by rat tissue and partly transferred to brain, kidney, liver and perinephric adipose tissue.
Source: Texaco Ltd Pembroke-Dyfed
Test substance: n-Butane, CAS No. 106-97-8

(130)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 15 minute(s)
Value: > 800000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of propane in air for 15 minutes. Where deaths occurred, they were during, not after, exposure and were associated with depressant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: OK Raffinaderi AB Göteborg
Test substance: Propane, CAS No. 74-98-6 (129)

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 15 minute(s)
Value: 570000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of isobutane in air for 15 minutes. Where deaths occurred, they were during, not after, exposure and were associated with stimulant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: OK Raffinaderi AB Göteborg
Test substance: Isobutane, CAS No. 75-28-5 (129)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 4 hour(s)
Value: 658 mg/l
Method: other: procedure as detailed in paper by Shugaev (see Reference).
Year: 1969 **GLP:** no data
Test substance: other TS
Remark: Rats were exposed to a range of butane concentrations in air for 4 hours. Following exposure, hydrocarbon accumulation in several organs was determined.

n-Butane is partially absorbed by rat tissue and partly transferred to brain, kidney, liver and perinephric adipose tissue.
Source: OK Raffinaderi AB Göteborg
Test substance: n-Butane, CAS No. 106-97-8

(130)

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 15 minute(s)
Value: > 800000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of propane in air for 15 minutes. Where deaths occurred, they were during, not after, exposure and were associated with depressant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Skandinaviska Raffinaderi AB Lysekil
Test substance: Propane, CAS No. 74-98-6

(129)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 15 minute(s)
Value: 570000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of isobutane in air for 15 minutes. Where deaths occurred, they were during, not after, exposure and were associated with stimulant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Skandinaviska Raffinaderi AB Lysekil
Test substance: Isobutane, CAS No. 75-28-5

(129)

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 4 hour(s)
Value: 658 mg/l
Method: other: procedure as detailed in paper by Shugaev (see Reference).
Year: 1969 **GLP:** no data
Test substance: other TS
Remark: Rats were exposed to a range of butane concentrations in air for 4 hours. Following exposure, hydrocarbon accumulation in several organs was determined.

n-Butane is partially absorbed by rat tissue and partly transferred to brain, kidney, liver and perinephric adipose tissue.
Source: Skandinaviska Raffinaderi AB Lysekil
Test substance: n-Butane, CAS No. 106-97-8

(130)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 15 minute(s)
Value: > 800000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of propane in air for 15 minutes. Where deaths occurred, they were during, not after, exposure and were associated with depressant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Phillips Petroleum Company Norway Tananger
Test substance: Propane, CAS No. 74-98-6

(131)

Type: LC50
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 15 minute(s)
Value: 570000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of isobutane in air for 15 minutes. Where deaths occurred, they were during, not after, exposure and were associated with stimulant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Phillips Petroleum Company Norway Tananger
Test substance: Isobutane, CAS No. 75-28-5

(131)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: LC50
 Species: rat
 Sex:
 Number of Animals:
 Vehicle:
 Exposure time: 4 hour(s)
 Value: 658 mg/l
 Method: other: procedure as detailed in paper by Shugaev (see Reference).
 Year: 1969 GLP: no data
 Test substance: other TS
 Remark: Rats were exposed to a range of butane concentrations in air for 4 hours. Following exposure, hydrocarbon accumulation in several organs was determined.

n-Butane is partially absorbed by rat tissue and partly transferred to brain, kidney, liver and perinephric adipose tissue.

Source: Phillips Petroleum Company Norway Tananger
 Test substance: n-Butane, CAS No. 106-97-8

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Type: LC50
 Species: rat
 Sex:
 Number of Animals:
 Vehicle:
 Exposure time: 15 minute(s)
 Value: > 800000 ppm
 Method:
 Year: GLP: no data
 Test substance: as prescribed by 1.1 - 1.4
 Remark: Die LC50 wurde > 80 Vol. % angegeben.
 Die EC50 fuer Wirkung auf das CNS wurde mit 28 Vol. % (280000 ppm) fuer 10 min. Exposition angegeben.
 Source: BASF AG Ludwigshafen

(133)

Type: LC50
 Species: rat
 Sex:
 Number of Animals:
 Vehicle:
 Exposure time: 15 minute(s)
 Value: > 1464 mg/l
 Method:
 Year: GLP: no data
 Test substance: no data
 Remark: original value: LC50 > 80 Vol. % (800000 ppm).
 Groups of 6 male or 6 female Alderley Park rats were used. CNS-Depression was observed. Recovery from non-lethal exposure was very rapid; affected animals appeared to be normal within 10 minutes.
 Source: BASF AG Ludwigshafen

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Test substance: propane; no further data (134) (135) (136)

Type: other: EC50 (CNS) *

Species: rat

Sex:

Number of
Animals:

Vehicle:

Exposure time: 10 minute(s)

Value: ca. 510 mg/l

Method:

Year:

GLP: no data

Test substance: no data

Remark: original value: EC50 = 28 % (v/v) (280000 ppm).
Groups of 6 male or 6 female Alderley Park rats were used.
CNS-Depression was observed. Recovery from non-lethal
exposure was very rapid; affected animals appeared to be
normal within 10 minutes.

Source: BASF AG Ludwigshafen

Test substance: propane; no further data

(135) (136)

Type: other: EC50 (CNS)

Species: rat

Sex:

Number of
Animals:

Vehicle:

Exposure time: 10 minute(s)

Value: 280000 ppm

Method: other: procedure as detailed in paper by Clark and Tinston
(see Reference).

Year:

1982

GLP: no data

Test substance: other TS

Remark: EC50 (CNS) is the effective concentration causing either
stimulation or depression of the central nervous system
(CNS) in half the animals tested.
Groups of 6 male or 6 female specific pathogen-free (SPS)
Alderley Park rats were exposed to various concentrations
of propane in air for 10 minutes. Where deaths occurred,
they were during, not after, exposure and were associated
with depressant effects on the central nervous system (CNS).
Recovery from non-lethal exposure was rapid, and affected
animals appeared normal within 10 minutes.

Source: Compañia Española de Petroleos CEPESA Madrid

Test substance: Propane, CAS No. 74-98-6

(127)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: other: EC50 (CNS)
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 10 minute(s)
Value: 200000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: EC50 (CNS) is the effective concentration causing either stimulation or depression of the central nervous system (CNS) in half the animals tested. Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of isobutane in air for 10 minutes. Where deaths occurred, they were during, not after, exposure and were associated with stimulant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Compañia Española de Petroleos CEPSA Madrid
Test substance: Isobutane, CAS No. 75-28-5

(127)

Type: other: EC50 (CNS)
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 10 minute(s)
Value: 280000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: EC50 (CNS) is the effective concentration causing either stimulation or depression of the central nervous system (CNS) in half the animals tested. Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of propane in air for 10 minutes. Where deaths occurred, they were during, not after, exposure and were associated with depressant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Texaco Ltd Pembroke-Dyfed
Test substance: Propane, CAS No. 74-98-6

(129)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: other: EC50 (CNS)
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 10 minute(s)
Value: 200000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: EC50(CNS) is the effective concentration causing either stimulation or depression of the central nervous system (CNS) in half the animals tested.
Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of isobutane in air for 10 minutes. Where deaths occurred, they were during, not after, exposure and were associated with stimulant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Texaco Ltd Pembroke-Dyfed
Test substance: Isobutane, CAS No. 75-28-5 (129)

Type: other: EC50 (CNS)
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 10 minute(s)
Value: 280000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: EC50(CNS) is the effective concentration causing either stimulation or depression of the central nervous system (CNS) in half the animals tested.
Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of propane in air for 10 minutes. Where deaths occurred, they were during, not after, exposure and were associated with depressant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: OK Raffinaderi AB Göteborg
Test substance: Propane, CAS No. 74-98-6 (129)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: other: EC50 (CNS)
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 10 minute(s)
Value: 200000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: EC50(CNS) is the effective concentration causing either stimulation or depression of the central nervous system (CNS) in half the animals tested.
Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of isobutane in air for 10 minutes. Where deaths occurred, they were during, not after, exposure and were associated with stimulant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: OK Raffinaderi AB Göteborg
Test substance: Isobutane, CAS No. 75-28-5

(129)

Type: other: EC50 (CNS)
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 10 minute(s)
Value: 280000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: EC50(CNS) is the effective concentration causing either stimulation or depression of the central nervous system (CNS) in half the animals tested.
Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of propane in air for 10 minutes. Where deaths occurred, they were during, not after, exposure and were associated with depressant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Skandinaviska Raffinaderi AB Lysekil
Test substance: Propane, CAS No. 74-98-6

(129)

5. Toxicity

date: 19-FEB-2000
Substance ID: 74-98-6

Type: other: EC50 (CNS)
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 10 minute(s)
Value: 200000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: EC50(CNS) is the effective concentration causing either stimulation or depression of the central nervous system (CNS) in half the animals tested. Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of isobutane in air for 10 minutes. Where deaths occurred, they were during, not after, exposure and were associated with stimulant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Skandinaviska Raffinaderi AB Lysekil
Test substance: Isobutane, CAS No. 75-28-5

(129)

Type: other: EC50 (CNS)
Species: rat
Sex:
Number of Animals:
Vehicle:
Exposure time: 10 minute(s)
Value: 280000 ppm
Method: other: procedure as detailed in paper by Clark and Tinston (see Reference).
Year: 1982 **GLP:** no data
Test substance: other TS
Remark: EC50(CNS) is the effective concentration causing either stimulation or depression of the central nervous system (CNS) in half the animals tested. Groups of 6 male or 6 female specific pathogen-free (SPS) Alderley Park rats were exposed to various concentrations of propane in air for 10 minutes. Where deaths occurred, they were during, not after, exposure and were associated with depressant effects on the central nervous system (CNS). Recovery from non-lethal exposure was rapid, and affected animals appeared normal within 10 minutes.
Source: Phillips Petroleum Company Norway Tananger
Test substance: Propane, CAS No. 74-98-6

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