

CID 1030

Propylene glycol

Ecological Information



1.1 EPA Ecotoxicity



Pesticide Ecotoxicity Data from EPA

4 items

Record ID	Chemical	Pesticide Type	Organism	Common Name	Scientific Name	Age	Study Length	Dose Type	TGL	Toxicity	Unit
14522	Propylene glycol	Insecticide	Aves	Bobwhite quail	Colinus virginianus	26WKS	14 D	LD50	>	2000	MGK
14523	Propylene glycol	Insecticide	Crustacea	Water flea	Daphnia magna	<24 hr	48 hr	EC50	>	110	PPM
14524	Propylene glycol	Insecticide	Aves	Bobwhite quail	Colinus virginianus	28WKS	14 D	LD50	>	2150	MGK
14525	Propylene glycol	Insecticide	Crustacea	Water flea	Daphnia magna	<24 hr	48 hr	EC50	>	1000	PPM

► [EPA Pesticide Ecotoxicity Database](#)

1.2 US EPA Regional Screening Levels for Chemical Contaminants



Resident Soil (mg/kg)	1.30e+05
Industrial Soil (mg/kg)	1.60e+06
Tapwater (ug/L)	4.00e+04
Risk-based SSL (mg/kg)	8.10e+00
Chronic Oral Reference Dose (mg/kg-day)	2.00e+01
Fraction of Contaminant Absorbed in Gastrointestinal Tract	1
Fraction of Contaminant Absorbed Dermally from Soil	0.1

► [US EPA Regional Screening Levels for Chemical Contaminants at Superfund Sites](#)

1.3 US EPA Regional Removal Management Levels for Chemical Contaminants



Resident Soil (mg/kg)	3.80e+06
Industrial Soil (mg/kg)	4.90e+07
Tapwater (ug/L)	1.20e+06
Chronic Oral Reference Dose (mg/kg-day)	2.00e+01

Fraction of Contaminant Absorbed in Gastrointestinal Tract	1
Fraction of Contaminant Absorbed Dermally from Soil	0.1

► [US EPA Regional Screening Levels for Chemical Contaminants at Superfund Sites](#)

1.4 Environmental Fate/Exposure Summary



Propylene glycol's production and use as an antifreeze in breweries and dairy establishments, substitute for [ethylene glycol](#) and [glycerol](#), in the manufacture of synthetic resins, emulsifier in foods, solvent for food colors and flavors, and pharmaceutical aid (humectant, solvent) may result in its release to the environment through various waste streams. Its use to create artificial smoke and mist for theatrical use, as an airplane de-icing fluid and in aerosol mists that are commonly used in hospitals and public buildings for disinfection purposes will result in its direct release to the environment. If released to air, a vapor pressure of 0.13 mm Hg at 25 °C indicates propylene glycol will exist solely as a vapor in the ambient atmosphere. Vapor-phase propylene glycol will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 32 hours. Propylene glycol does not contain chromophores that absorb at wavelengths >290 nm and therefore is not expected to be susceptible to direct photolysis by sunlight. If released to soil, propylene glycol is expected to have very high mobility based upon an estimated Koc of 1. Volatilization from moist soil surfaces is not expected to be an important fate process based upon an estimated Henry's Law constant of 1.3×10^{-8} atm-cu m/mole. Propylene glycol is not expected to volatilize from dry soil surfaces based upon its vapor pressure. Propylene glycol was mineralized 73-78% in laboratory studies conducted using an agricultural soil over a 51 day incubation period, suggesting biodegradation will be an important environmental fate process in soil. If released into [water](#), propylene glycol is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Volatilization from [water](#) surfaces is not expected to be an important fate process based upon this compound's estimated Henry's Law constant. Numerous screening studies using wastewater or sewage inoculum as seed suggest that propylene glycol will be degraded readily in aqueous environments. An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low. Propylene glycol is not expected to undergo hydrolysis since this compound lacks functional groups that hydrolyze under environmental conditions. Occupational exposure to propylene glycol may occur through inhalation and dermal contact with this compound at workplaces where propylene glycol is produced or used. Monitoring and use data indicate that the general population may be exposed to propylene glycol via inhalation and dermal contact with consumer products containing propylene glycol. (SRC)

► [Hazardous Substances Data Bank \(HSDB\)](#)

1.5 Artificial Pollution Sources



Propylene glycol's production and use as an antifreeze in breweries and dairy establishments, substitute for [ethylene glycol](#) and [glycerol](#), in the manufacture of synthetic resins, emulsifier in foods, solvent for food colors and flavors, and pharmaceutical aid (humectant, solvent)(1) may result in its release to the environment through various waste streams(SRC). Its use to create artificial smoke and mist for theatrical use, as an airplane de-icing fluid(1) and in aerosol mists that are commonly used in hospitals and public buildings for disinfection purposes(2) will result in its direct release to the environment(SRC).

(1) O'Neil MJ, ed; *The Merck. 14th ed Whitehouse Station, NJ: Merck and Co., Inc., p. 1350 (2006)* (2) Finis L et al; *Patty's Toxicology 5th ed. Bingham E et al, eds., New York, NY: John Wiley & Sons 7: 26-31 (2001)*

► [Hazardous Substances Data Bank \(HSDB\)](#)

1.6 Environmental Fate



TERRESTRIAL FATE: Based on a classification scheme(1), an estimated Koc value of 1(SRC), determined from a log Kow of -0.92(2) and a regression-derived equation(3), indicates that propylene glycol is expected to have very high mobility in soil(SRC). Volatilization of propylene glycol from moist soil surfaces is not expected to be an important fate process(SRC) given an estimated

Henry's Law constant of 1.3×10^{-8} atm-cu m/mole(SRC), derived from its vapor pressure, 0.13 mm Hg(4), and assigned value for [water](#) solubility of 1×10^6 mg/L (miscible)(5). Propylene glycol is not expected to volatilize from dry soil surfaces(SRC) based upon its vapor pressure(4). Laboratory experiments using agricultural soils from South Carolina conducted at 22 °C and a fortification of 1,000 ppm propylene glycol, yielded 73-78% mineralization during a 51 day incubation period(6), suggesting that biodegradation will be an important fate process in soils(SRC).

(1) Swann RL et al; *Res Rev* 85: 17-28 (1983) (2) Hansch C et al; *Exploring QSAR. Hydrophobic, Electronic, and Steric Constants*. ACS Prof Ref Book. Heller SR, consult. ed., Washington, DC: Amer Chem Soc p. 7 (1995) (3) US EPA; *Estimation Program Interface (EPI) Suite*. Ver. 4.0. Jan, 2009. Available from <http://www.epa.gov/oppt/exposure/pubs/episuite.html> as of Feb 12, 2010. (4) Daubert TE, Danner RP; *Physical and Thermodynamic Properties of Pure Chemicals Data Compilation* Washington, DC: Taylor and Francis (1989) (5) Yalkowsky SH, Dannenfelser RM; *The AQUASOL dATABASE of Aqueous Solubility*. Ver 5. Tucson, AZ: Univ AZ, College of Pharmacy (1992) (6) Shupack DP, Anderson TA; *Water Air Soil Pollut* 118: 53-58 (2000)

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AQUATIC FATE: Based on a classification scheme(1), an estimated Koc value of 1(SRC), determined from a log Kow of -0.92(2) and a regression-derived equation(3), indicates that propylene glycol is not expected to adsorb to suspended solids and sediment(SRC). Volatilization from [water](#) surfaces is not expected(3) based upon an estimated Henry's Law constant of 1.3×10^{-8} atm-cu m/mole(SRC), derived from its vapor pressure, 0.13 mm Hg(5), and assigned value for [water](#) solubility of 1×10^6 mg/L (miscible)(6). According to a classification scheme(7), an estimated BCF of 3(SRC), from its log Kow(2) and a regression-derived equation(8), suggests the potential for bioconcentration in aquatic organisms is low(SRC). Numerous screening studies using wastewater or sewage inoculum as seed, suggests that propylene glycol will be degraded readily under aqueous environments(9-11).

(1) Swann RL et al; *Res Rev* 85: 17-28 (1983) (2) Hansch C et al; *Exploring QSAR. Hydrophobic, Electronic, and Steric Constants*. ACS Prof Ref Book. Heller SR, consult. ed., Washington, DC: Amer Chem Soc p. 7 (1995) (3) US EPA; *Estimation Program Interface (EPI) Suite*. Ver. 4.0. Jan, 2009. Available from <http://www.epa.gov/oppt/exposure/pubs/episuite.html> as of Feb 12, 2010. (4) Lyman WJ et al; *Handbook of Chemical Property Estimation Methods*. Washington, DC: Amer Chem Soc pp. 15-1 to 15-29 (1990) (5) Daubert TE, Danner RP; *Physical and Thermodynamic Properties of Pure Chemicals Data Compilation* Washington, DC: Taylor and Francis (1989) (6) Yalkowsky SH, He Y; *Handbook of Aqueous Solubility Data: An Extensive Compilation of Aqueous Solubility Data for Organic Compounds Extracted from the AQUASOL dATABASE*. Boca Raton, FL: CRC Press LLC, (2003) (7) Franke C et al; *Chemosphere* 29: 1501-14 (1994) (8) Meylan WM et al; *Environ Toxicol Chem* 18: 664-72 (1999) (9) Bridie AL et al; *Water Res* 13: 627-30 (1979) (10) Helfgott TB et al; *An Index of Refractory Organics*. USEPA-66/2-77-174 (1977) (11) Wagner R; *Vom Wasser* 47: 241-65 (1976)

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ATMOSPHERIC FATE: According to a model of gas/particle partitioning of semivolatile organic compounds in the atmosphere(1), propylene glycol, which has a vapor pressure of 0.13 mm Hg at 25 °C(2), is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase propylene glycol is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals(SRC); the half-life for this reaction in air is estimated to be 32 hours(SRC), calculated from its rate constant of 1.2×10^{-11} cu cm/molecule-sec at 25 °C(3). Propylene glycol does not contain chromophores that absorb at wavelengths >290 nm and therefore is not expected to be susceptible to direct photolysis by sunlight(4).

(1) Bidleman TF; *Environ Sci Technol* 22: 361-367 (1988) (2) Daubert TE, Danner RP; *Physical and Thermodynamic Properties of Pure Chemicals Data Compilation* Washington, DC: Taylor and Francis (1989) (3) Atkinson R; *J Phys Chem Ref Data Monograph* 1 (1989) (4) Lyman WJ et al; *Handbook of Chemical Property Estimation Methods*. Washington, DC: Amer Chem Soc pp. 8-12 (1990)

► [Hazardous Substances Data Bank \(HSDB\)](#)

1.7 Environmental Biodegradation



AEROBIC: Propylene glycol achieved 64% of its theoretical BOD using a sewage inoculum and a 5 day incubation period(1). A Warburg respirometer study employing a sewage seed showed that propylene glycol reached 78% of its theoretical BOD during a 40 day incubation period(2). Propylene glycol achieved 2.2, 56.7 and 80% of its theoretical BOD using a sewage inoculum and 5, 10, and 50 day incubation periods, respectively(3). Using raw wastewater and synthetic seawater as inoculum, propylene glycol achieved 55 and 83% of its theoretical BOD during 5 and 20 day incubation periods, respectively(4). Using wastewater from pretreated domestic sewage, propylene glycol reached 74.5% of its theoretical BOD in 5 days(5). Propylene glycol underwent 73-78% mineralization within 51 days when incubated with various agricultural soils from Clemson University, SC under laboratory conditions at 22 °C and 1,000 ppm propylene glycol in the soil; 40-79% mineralization was observed for propylene glycol incubated in the same soils for 64 days at 7 °C(6).

(1) Bridie AL et al; *Water Res* 13: 627-30 (1979) (2) Helfgott TB et al; *An Index of Refractory Organics*. USEPA-66/2-77-174 (1977) (3) Lamb CB, Jenkins GF; p. 326-9 in *Proc 8th Industrial Waste Conf*, Purdue Univ (1952) (4) Price KS et al; *J Water Pollut Control Fed* 46: 63-77 (1974) (5) Wagner R; *Vom Wasser* 47: 241-65 (1976) (6) Shupack DP, Anderson TA; *Water Air Soil Pollut* 118: 53-58 (2000)

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AEROBIC: Propylene glycol is mineralized to CO₂ in soil microcosms incubated at temperatures ranging from -2 to 25 °C. No lag time period was observed. Degradation occurred with propylene glycol alone and in combination with [ethylene glycol](#) and [diethylene glycol](#) at glycol concentrations ranging from 392 to 5278 mg/kg suggesting that high levels of glycols in deicing fluids are unlikely to inhibit biodegradation. Complete disappearance of 0.045% propylene glycol occurred after 12 days at 8 °C and 57% of the theoretical [oxygen](#) demand was recovered after 34 days. With 0.45% propylene glycol, 76% degradation and 44% mineralization was obtained after 111 days(1). The rate of biodegradation ranged from 11.4 to 41.4 mg/kg soil per day at 8 °C with an average of 22.7 mg/kg per day. Rates at 25 °C were approximately 3.4 times faster than those at 8 °C, ranging from 78.9 to 88 mg/kg per day with a mean of 83.5 mg/kg per day. At -2 °C, biodegradation rates for propylene glycol ranged from 1.1 to 3.5 mg/kg per day with a mean of 2.3 mg/kg per day. After 111 days of incubation at -2 °C, 14% degradation to the parent compound was observed and the BOD was 8% of the theoretical [oxygen](#) demand(1).

(1) Klecka GM et al; *Ecotox Environ Saf* 25: 280-95 (1993)

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AEROBIC: Propylene glycol reached 90% of its theoretical BOD in 14 days in the Japanese MITI test(1). A mixture of propylene glycol, [diethylene glycol](#) and [potassium acetate](#) reached 32.9, 30.2%, and 24.1% of its theoretical BOD in 5 days, respectively at 8 °C, 4 °C and 1 °C(2). The measured surface biodegradation rates for deicing fluids, specifically propylene glycol, was 0.073 day⁻¹(2). Aircraft deicing fluid, the major constituents being [ethylene glycol](#) and propylene glycol, reached concentrations ranging from 350-245,000 mg/L, with an average of 87,000 mg/L, of its theoretical BOD after 5 days(3).

(1) Sedykh A, Klopman G; *SAR QSAR Environ Res* 18(7-8): 693-709 (2007) (2) Revitt DM, Worrall P; *Water Sci Technol* 48: 103-111 (2003) (3) Zitomer DH, Tonuk GU; *J Environ Eng* 129: 123-129 (2003)

► [Hazardous Substances Data Bank \(HSDB\)](#)

ANAEROBIC: Using an activated sludge or digester sludge incubated under anaerobic conditions, propylene glycol was completely degraded within 5-9 days, while a sterile control showed no degradation(1). Rapid propylene glycol degradation is observed in topsoil materials high in organic matter at 20 °C; in subsoil materials, degradation of propylene glycol is very slow and incomplete(2).

(1) Kaplan DL et al; *Environ Sci Technol* 16: 723-5 (1982) (2) Jaesche P et al; *J Contam Hydrol* 85: 271-286 (2006)

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1.8 Environmental Abiotic Degradation



Under ordinary conditions propylene glycol is stable, but at high temps it tends to oxidize giving rise to products such as [propionaldehyde](#), [lactic acid](#), [pyruvic acid](#) and [acetic acid](#).

O'Neil, M.J. (ed.). *The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals*. Whitehouse Station, NJ: Merck and Co., Inc., 2006., p. 1350

► [Hazardous Substances Data Bank \(HSDB\)](#)

The rate constant for the vapor-phase reaction of propylene glycol with photochemically-produced hydroxyl radicals has been measured as 1.2X10⁻¹¹ cu cm/molecule-sec at 25 °C(1). This corresponds to an atmospheric half-life of about 32 hours at an atmospheric concentration of 5X10⁺⁵ hydroxyl radicals per cu cm(1). Propylene glycol is not expected to undergo hydrolysis in the environment due to the lack of hydrolyzable functional groups(2). Propylene glycol does not contain chromophores that absorb at wavelengths >290 nm and therefore is not expected to be susceptible to direct photolysis by sunlight(2). The rate constant for the reaction of propylene glycol with hydroxyl radicals in aqueous solution is approximately 0.94-1.68X10⁺⁹ L/mol-sec(3); if the hydroxyl radical concn of sunlit natural [water](#) is assumed to be 1X10⁻¹⁷ moles/L(4), the half-life would be approximately 1.3-2.3 years(SRC).

(1) Atkinson R; *J Phys Chem Ref Data Monograph* 1 (1989) (2) Lyman WJ et al; *Handbook of Chemical Property Estimation Methods*. Washington, DC: Amer Chem Soc pp. 7-4, 7-5, 8-12 (1990) (3) Anbar M, Neta P; *Int J Appl Radiation Isotopes* 18: 493-523 (1967) (4) Mill T et al; *Science* 207: 886-7 (1980)

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1.9 Environmental Bioconcentration



An estimated BCF of 3 was calculated for propylene glycol(SRC), using a log Kow of -0.92(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

(1) Hansch C et al; *Exploring QSAR. Hydrophobic, Electronic, and Steric Constants*. ACS Prof Ref Book. Heller SR, consult. ed., Washington, DC: Amer Chem Soc p. 7 (1995) (2) Meylan WM et al; *Environ Toxicol Chem* 18: 664-72 (1999) (3) Franke C et al; *Chemosphere* 29: 1501-14 (1994)

► [Hazardous Substances Data Bank \(HSDB\)](#)

1.10 Soil Adsorption/Mobility



Soil Adsorption Coefficient

2.29 L/kg

► [EPA DSSTox](#)

The Koc of propylene glycol is estimated as 1(SRC), using a log Kow of -0.92(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that propylene glycol is expected to have very high mobility in soil(SRC).

(1) Hansch C et al; *Exploring QSAR. Hydrophobic, Electronic, and Steric Constants*. ACS Prof Ref Book. Heller SR, consult. ed., Washington, DC: Amer Chem Soc p. 7 (1995) (2) US EPA; *Estimation Program Interface (EPI) Suite*. Ver. 4.0. Jan, 2009. Available from <http://www.epa.gov/oppt/exposure/pubs/episuite.html> as of Feb 12, 2010. (3) Swann RL et al; *Res Rev* 85: 17-28 (1983)

► [Hazardous Substances Data Bank \(HSDB\)](#)

1.11 Volatilization from Water/Soil



The Henry's Law constant for propylene glycol is estimated as 1.3×10^{-8} atm-cu m/mole(SRC) derived from its vapor pressure, 0.13 mm Hg(1), and assigned value for [water](#) solubility of 1×10^6 mg/L (miscible)(2). This Henry's Law constant indicates that propylene glycol is expected to be essentially nonvolatile from [water](#) surfaces(3). Propylene glycol is not expected to volatilize from dry soil surfaces(SRC) based upon its vapor pressure(1).

(1) Daubert TE, Danner RP; *Physical and Thermodynamic Properties of Pure Chemicals Data Compilation* Washington, DC: Taylor and Francis (1989) (2) Yalkowsky SH, He Y; *Handbook of Aqueous Solubility Data: An Extensive Compilation of Aqueous Solubility Data for Organic Compounds Extracted from the AQUASOL dATABASE*. Boca Raton, FL: CRC Press LLC, (2003) (3) Lyman WJ et al; *Handbook of Chemical Property Estimation Methods*. Washington, DC: Amer Chem Soc pp. 15-1 to 15-29 (1990)

► [Hazardous Substances Data Bank \(HSDB\)](#)

1.12 Environmental Water Concentrations



GROUNDWATER: Propylene glycol was detected at a concentration of 4 mg/L in samples from a perched [water](#) table at the Ottawa Airport, Ontario, Canada(1).

(1) ATSDR; *Toxicological Profile for Propylene Glycol*. Atlanta, GA: Agency for Toxic Substances and Disease Registry, US Public Health Service (2009). Available from, as of August 25, 2010: <http://www.atsdr.cdc.gov/toxprofiles/index.asp>

► [Hazardous Substances Data Bank \(HSDB\)](#)

SURFACE [WATER](#): Trigg Lake and Big Bear Creek, in the vicinity of the Dallas/Fort Worth International Airport, TX, were monitored for aircraft deicer/anti-icer fluid runoff from October 2002 to April 2004. Glycol concentrations at outfalls ranged from less than 81 to 23,800 mg/L; concentrations in Big Bear Creek ranged from less than 18 to 230 mg/L, with 10 and 35% of what was applied to aircraft was subsequently discharged into the creek. Glycol effluent released to Trigg Lake was initially diluted and degraded prior

to reaching the lake outlet(1). Propylene glycol was detected in storm [water](#) runoff at the Salt Lake City airport Utah at concentrations up to 19,000 mg/L. The compound may also be released to surface [water](#) as a metabolite of the military propellant [propylene glycol dinitrate](#) which is found in waste [water](#) streams from munitions facilities(2).

(1) Corsi SR et al; *Environ Toxicol Chem* 25: 2890-900 (2006) (2) ATSDR; *Toxicological Profile for Propylene Glycol*. Atlanta, GA: Agency for Toxic Substances and Disease Registry, US Public Health Service (2009). Available from, as of August 25, 2010: <http://www.atsdr.cdc.gov/toxprofiles/index.asp>

► [Hazardous Substances Data Bank \(HSDB\)](#)

1.13 Effluent Concentrations



Propylene glycol was identified, not quantified, in a wastewater effluent from a chemical plant in Memphis, TN in Aug 1974(1).

(1) Shackelford WM, Keith JL; *Frequency of Organic Compounds Identified in Water*. USEPA-600/4-76-062 p. 205 (1976)

► [Hazardous Substances Data Bank \(HSDB\)](#)

1.14 Atmospheric Concentrations



INDOOR AIR: Propylene glycol was detected in indoor air concentrations at the maximum concentration of 69.3 ug/cu m and the average concentration of 7.7 ug/cu m(1).

(1) Stolz P et al; in *Indoor Air in Organic Indoor Air Pollutants. Occurrence, Measurement, Evaluation*. Salthammer T, ed., New York, NY: Wiley-VCH, pp. 117-125 (1999)

► [Hazardous Substances Data Bank \(HSDB\)](#)

1.15 Other Environmental Concentrations



Propylene glycol was identified as a volatile component of latex-backed carpets(1). Propylene glycol was detected in newly manufactured and site houses at concentrations of 1.1-12.0 ppb and < 2.2-360 ppb in North America(2).

(1) USCPSC; *Status Report for Chemical Emissions from New Carpets*. US Consumer Product Safety Commission (1993) (2) Hodgson At et al; *Indoor Air* 10: 178-9 (2000)

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Propylene glycol was detected in snowbanks within the General Mitchell International Airport in Wisconsin, a medium-sized airport. The compound was identified as the main constituent, with the concentration ranging from 144 to 8,210 kg from February 2000-March 2003. Glycol content in snowbanks ranged from 0.17- 11.4%(1)

(1) Corsi SR et al; *Environ Sci Technol* 40: 3195-3202 (2006)

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Propylene glycol was present in the following consumer product categories: paint primers and varnishes, all purpose cleaners, room deodorants and disinfectants, personal deodorants, and metal cleaners and polishes(1). The weight percentage of propylene glycol in the products ranged from 16.15% to 42.47%(1). Propylene glycol was also detected in oven spray cleaner at unknown concentrations(2).

(1) USEPA; *Compilation and speciation of National Emissions Factor for consumer/commercial solvent use. Information compiled to support urban air toxics assessment studies*. USEPA-450/2-89-008 (1989) (2) Salthammer T; in *Organic Indoor Air Pollutants. Occurrence, Measurement, Evaluation*. Salthammer T, ed., New York, NY: Wiley-VCH, pp. 219-232 (1999)

► [Hazardous Substances Data Bank \(HSDB\)](#)

1.16 Probable Routes of Human Exposure



According to the 2006 [TSCA](#) Inventory Update Report, the number of persons reasonably likely to be exposed in the industrial manufacturing, processing, and use for propylene glycol is 1000 or greater; the data may be greatly underestimated(1).

(1) US EPA; *Inventory Update Reporting (IUR). Non-confidential 2006 IUR Records by Chemical, including Manufacturing, Processing and Use Information*. Washington, DC: U.S. Environmental Protection Agency. Available from, as of March 2, 2010: <http://cfpub.epa.gov/iursearch/index.cfm>

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NIOSH (NOES Survey 1981-1983) has statistically estimated that 2,238,429 workers (936,584 of these are female) are potentially exposed to propylene glycol in the US(1). Occupational exposure to propylene glycol may occur through inhalation and dermal contact with this compound at workplaces where propylene glycol is produced or used(SRC). Monitoring and use data indicate that the general population may be exposed to propylene glycol via inhalation and dermal contact with consumer products containing propylene glycol(SRC).

(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 from, as of Feb 12, 2010: <http://www.cdc.gov/noes/>

► [Hazardous Substances Data Bank \(HSDB\)](#)