N-Phenyl-1-naphthylamine

sc-279787

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
N-Phenyl-1-naphthylamine

STATEMENT OF HAZARDOUS NATURE
CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA

SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800
EMERGENCY:
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS
C16-H13-N, antioxidant, phenylnaphthylamine, alpha-phenylnaphthylamine, 1-anilinonaphthalene, "vulkanox pan", N-phenyl-alpha-naphthylamine, "aceto PAN", "C.I. 44050", CI44050, "neozon a", "ozone a", PAN, PANA

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	1		
Toxicity:	2		
Body Contact:	2		
Reactivity:	0		
Chronic:	2		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

Harmful if swallowed.
May cause SENSITISATION by skin contact.
Irritating to eyes, respiratory system and skin.
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
■ Considered an unlikely route of entry in commercial/industrial environments.

EYE

■ This material can cause eye irritation and damage in some persons.
■ The dust may produce eye discomfort causing smarting, pain and redness.

SKIN

■ This material can cause inflammation of the skin oncontact in some persons.
■ Skin contact is not thought to have harmful health effects, however the material may still produce health damage following entry through wounds, lesions or abrasions.
■ Sensitization may result in allergic dermatitis responses includingrash, itching, hives or swelling of extremities.

INHALED

■ If inhaled, this material can irritate the throat andlungs of some persons.
■ Although inhalation is not thought to produce harmful effects, the material may still produce health damage, especially where pre-existing organ (e.g. liver, kidney) damage is evident.
■ Not normally a hazard due to non-volatile nature of product.
■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

CHRONIC HEALTH EFFECTS

■ Skin contact with the material is more likely to cause a sensitization reaction in some persons compared to the general population.
■ Principal routes of exposure are usually by skin contact and inhalation of generated dust.
Contact allergy to antioxidants of the phenylamine type found in
industrial greases has been reported.
[Kalimo etal, Contact Dermatitis, 20, 151-152, 1989]
■ Sensitization may give severe responses to very low levels of exposure, i.e. hypersensitivity.
A cohort study on cancer amongst workers exposed to anti-rust oil used in
the bearing ring wrapping department has concluded that the causative
agent was phenyl-alpha-naphthylamine or its N-nitroso-derivative.
Jarvholm & Lavenius, Scand.J. Work, Environment & Health, 7, 179-184,1981]
Rats showed increased lung cancer rates when injected with the technical
grade substance. [Wang etal, Cancer Research 44, pp 3098-3100, 1984]

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
phenyl-alpha-naphthylamine	90-30-2	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

@52b1#52a4#52a6

EYE

■ If this product comes in contact with the eyes: · Wash out immediately with fresh running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN

■ If skin contact occurs: · Immediately remove all contaminated clothing, including footwear · Flush skin and hair with running water (and soap if available).

INHALED

· If dust is inhaled, remove from contaminated area. · Encourage patient to blow nose to ensure clear passage of breathing. · If irritation or discomfort persists seek medical attention. · If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN

■ Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	1.1
Lower Explosive Limit (%):	Not available
Relative Vapor Density (air=1):	Not available

EXTINGUISHING MEDIA

· Alcohol stable foam.
· Dry chemical powder.
· Carbon dioxide.
· Water spray or fog - Large fires only.

FIRE FIGHTING

· Alert Emergency Responders and tell them location and nature of hazard.
· Wear breathing apparatus plus protective gloves for fire only.
When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 100 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

· Solid which exhibits difficult combustion or is difficult to ignite.
· Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
Decomposes on heating and produces toxic fumes of nitrogen oxides (NOx) and ammonia (NH3).

FIRE INCOMPATIBILITY

■ Flammable.

PERSONAL PROTECTION

Glasses:
Chemical goggles.
Gloves:
General purpose rubber glove.
Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Clean up all spills immediately.
· Avoid contact with skin and eyes.
MAJOR SPILLS
· Clear area of personnel and move upwind.
· Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

■ Avoid generating and breathing dust Avoid generation of static electricity.
· Limit all unnecessary personal contact.
· Wear protective clothing when risk of exposure occurs.

RECOMMENDED STORAGE METHODS

■ Plastic container.
Multi ply paper bag with sealed plastic liner or heavy gauge plastic bag. NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.

STORAGE REQUIREMENTS

· Store in original containers.
· Keep containers securely sealed.
· No smoking, naked lights or ignition sources.
· Store in a cool, dry, well-ventilated area.
· Store away from incompatible materials and foodstuff containers.
· Protect containers against physical damage and check regularly for leaks.
· Observe manufacturer's storing and handling recommendations.
Keep below 40 deg. C.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

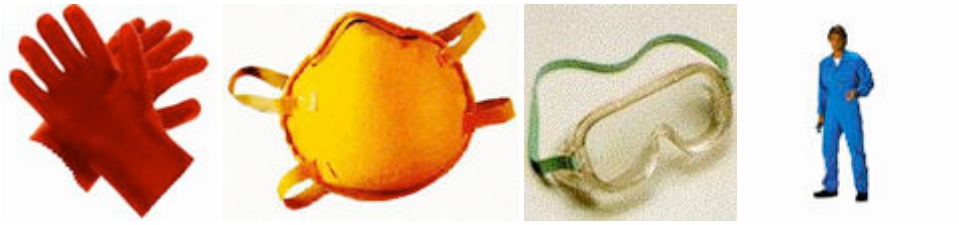
Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
US - Oregon Permissible Exposure Limits (Z-3)	Bayer Additin 30 (Inert or Nuisance Dust: (d) Total dust)		10						Oregon Permissible Exposure Limits (PELs) are different than the federal limits.
US OSHA Permissible Exposure Levels (PELs) - Table Z3	Bayer Additin 30 (Inert or Nuisance Dust: (d) Respirable fraction)		5						
US OSHA Permissible Exposure Levels (PELs) - Table Z3	Bayer Additin 30 (Inert or Nuisance Dust: (d) Total dust)		15						
US - Hawaii Air Contaminant Limits	Bayer Additin 30 (Particulates not other wise regulated - Total dust)		10						
US - Hawaii Air Contaminant Limits	Bayer Additin 30 (Particulates not other wise regulated - Respirable fraction)		5						
US - Oregon Permissible Exposure Limits (Z-3)	Bayer Additin 30 (Inert or Nuisance Dust:(d) Respirable fraction)		5						Oregon Permissible Exposure Limits (PELs) are different than the federal limits.
Canada - Ontario Occupational Exposure Limits	phenyl-alpha-naphthylamine (Particles (Insoluble or Poorly Soluble) Not Otherwise)		10 (I)						
Canada - British Columbia Occupational Exposure Limits	phenyl-alpha-naphthylamine (Particles (Insoluble or Poorly Soluble) Not Otherwise		10 (N)						

	Classified (PNOC))				
Canada - Ontario Occupational Exposure Limits	phenyl-alpha-naphthylamine (Specified (PNOS) / Particules (insolubles ou peu solubles) non précisées par ailleurs)		3 (R)		
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	phenyl-alpha-naphthylamine (Particulates not otherwise regulated Respirable fraction)		5		
US - California Permissible Exposure Limits for Chemical Contaminants	phenyl-alpha-naphthylamine (Particulates not otherwise regulated Respirable fraction)		5		(n)
US - Oregon Permissible Exposure Limits (Z-1)	phenyl-alpha-naphthylamine (Particulates not otherwise regulated (PNOR) (f) Total Dust)	-	10		Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits. PNOR means “particles not otherwise regulated.”
US - Michigan Exposure Limits for Air Contaminants	phenyl-alpha-naphthylamine (Particulates not otherwise regulated, Respirable dust)		5		
US - Oregon Permissible Exposure Limits (Z-1)	phenyl-alpha-naphthylamine (Particulates not otherwise regulated (PNOR) (f) Respirable Fraction)	-	5		Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits. PNOR means “particles not otherwise regulated.”
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air	phenyl-alpha-naphthylamine (Particulates not otherwise regulated (PNOR)(f)-		5		

Contaminants	Respirable fraction)		
Canada - Prince Edward Island Occupational Exposure Limits	phenyl-alpha-naphthylamine (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)	10	See Appendix B current TLV/BEI Book

ENDOELTABLE

PERSONAL PROTECTION



RESPIRATOR

• particulate.

EYE

· Safety glasses with side shields
· Chemical goggles.

HANDS/FEET

■ Wear general protective gloves: i.e. Disposable polythene gloves or Cotton gloves or Light weight rubber gloves, with Barrier cream preferably Safety footwear.

OTHER

· Overalls.
· Barrier cream.

ENGINEERING CONTROLS

■ Use in a well-ventilated area.
· Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
· Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.
Does not mix with water.
Sinks in water.

State	Divided solid	Molecular Weight	219.29
Melting Range (°F)	136initial	Boiling Range (°F)	Not available
Solubility in water (g/L)	Partly miscible	Flash Point (°F)	>392
pH (1% solution)	neutral	Decomposition Temp (°F)	Not available
pH (as supplied)	Not applicable	Autoignition Temp (°F)	>932
Vapour Pressure (mmHG)	Negligible	Upper Explosive Limit (%)	Not available
Specific Gravity (water=1)	1.1	Lower Explosive Limit (%)	Not available
Relative Vapor Density (air=1)	Not available	Volatile Component (%vol)	Negligible
Evaporation Rate	Not available		

APPEARANCE

Slightly brown to slightly violet granular solid. Faint aromatic odour. Does not mix well with water. Solubility in water 0.003 g/L @ 20 deg. C. Soluble in hydrocarbons, dichloromethane, acetone, ethyl acetate, ethanol.

log Kow = 4.2 Based upon its physical/chemical properties, the distribution of N-phenyl-1-naphthylamine in the environment, predicted on the basis of a Level II fugacity model, was approximately 36% to soil, 34% to sediment, 29% to water, and less than 1% each to air, suspended sediment, and biota. Laboratory studies yielded half-lives for the photochemical degradation of N-phenyl-1-naphthylamine in water of 8.4 and 5.7 min. Photolysis may lead to the preliminary breakdown of N-phenyl-1-naphthylamine under favourable

environmental conditions, but further degradation is unlikely. The substance is stable to hydrolysis under environmental conditions, and removal by biodegradation in water and soil is slow. Owing to its moderate to high potential for sorption to organic soil constituents and its limited mineralization in soil, N-phenyl-1-naphthylamine is presumed to have geoaccumulation potential. The probability of infiltration into groundwater is low. Based upon studies with Daphnia and fish and its measured log Kow of 4.2, N-phenyl-1-naphthylamine is expected to have a moderate potential for bioaccumulation. Nevertheless, secondary poisoning of higher trophic levels via the aquatic food-chain seems unlikely in view of the chemical's metabolism and extensive excretion. The acute toxicity of N-phenyl-1-naphthylamine in fish and Daphnia is high, with lowest reported no-observed-effect concentrations (NOECs) of 0.11 mg/litre (192 h) and 0.02 mg/litre (21 days), respectively. Despite limited hydrolytic or biotic degradation, the bioavailability of this chemical in water is expected to be considerably reduced by sorption and photochemical degradation. Considering its measured log Kow of 4.2 and data from laboratory tests with Daphnia and freshwater fish, N-phenyl-1-naphthylamine is classified as a substance with moderate bioaccumulation potential For Daphnia magna, a mean bioconcentration factor (related to radioactivity) of 637 was calculated following exposure to [14C] N-phenyl-1-naphthylamine in a static test (solubiliser acetone; steady state after 12 h). About 50% of the accumulated radioactivity had been eliminated after 53 h in clean water. Bioconcentration factors ranging from 432 to 1285 (related to radioactivity) and from 233 to 694 (related to N-phenyl-1-naphthylamine) were determined in a flow-through system (sublethal N-phenyl-1-naphthylamine concentration) for the bluegill sunfish (Lepomis macrochirus) at steady state. Depuration was biphasic, with an elimination of [14C] N-phenyl-1-naphthylamine of >90% after 8 days; radioactivity could still be detected 32 days after treatment. Bioconcentration factors for N-phenyl-1-naphthylamine in common carp (Cyprinus carpio), measured in a flow-through system after 8 weeks, were on the same order of magnitude. N-phenyl-1-naphthylamine is metabolised by terrestrial and aquatic microorganisms and by fish to at least two or three unidentified metabolites

Material	Value

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY

■ Avoid reaction with oxidizing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

Bayer Additin 30

TOXICITY AND IRRITATION

BAYER ADDITIN 30:
■ Not available. Refer to individual constituents.
PHENYL-ALPHA-NAPHTHYLAMINE:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (Rat) LD50: 1625 mg/kg	Skin (rabbit): non-irritating *
Oral (Mouse) LD50: 1231 mg/kg	Eye(rabbit): slight Irritant *

■ Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's edema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type.
Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.
Owing to its low vapour pressure and use patterns, the ingestion or inhalation of N-phenyl-1-naphthylamine is expected to be minor. Dermal contact with oils and rubber articles containing N-phenyl-1-naphthylamine may occur in the workplace.
Based upon studies conducted with laboratory animals, N-phenyl-1-naphthylamine is well absorbed and extensively excreted after ingestion. Following ingestion by rats, 60% of the administered dose was excreted in the faeces and 35% in the urine within 72 h. Several unidentified metabolites of N-phenyl-1-naphthylamine have been detected in the urine of exposed rats. On the basis of in vitro studies, metabolism likely occurs primarily via hydroxylation. The acute oral toxicity of N-phenyl-1-naphthylamine in laboratory animals is low. In standard tests with rabbits, N-phenyl-1-naphthylamine was reported to be neither a skin irritant nor an eye irritant. However, the skin sensitizing properties of N-phenyl-1-naphthylamine were revealed in the guinea-pig maximization test as well as in humans exposed to greases or rubber materials containing this chemical. Limited data indicate that the kidneys and liver are the main target organs following ingestion. Adequate studies with which to derive putative effect levels were not identified. The potential carcinogenicity of N-phenyl-1-naphthylamine could not be fully evaluated, as none of the available studies was performed according to currently accepted

standard protocols. N-Phenyl-1-naphthylamine was not mutagenic in bacterial cells, nor were the frequencies of gene mutation (mouse lymphoma assay) or chromosomal aberrations (in vitro metaphase analysis in Chinese hamster ovary cells or Chinese hamster lung cells) increased in these cell types exposed in vitro. A marginally positive result in a sister chromatid exchange assay conducted with Chinese hamster ovary cells in the presence of metabolic activation has been reported. Unscheduled DNA synthesis was increased in exposed human lung (WI-38) cells; however, the effects were not clearly concentration dependent. N-Phenyl-1-naphthylamine was negative in a dominant lethal test conducted in mice. Based upon the available data, N-phenyl-1-naphthylamine does not appear to be genotoxic. Data on the reproductive/developmental toxicity and on immunological or neurological effects of N-phenyl-1-naphthylamine were not identified. An increased rate of cancer was observed in one epidemiological study of N-phenyl-1-naphthylamine-exposed workers; however, owing to the small number of excess deaths and concomitant exposure to other substances, it is not possible to attribute this effect solely to N-phenyl-1-naphthylamine. Although data are inadequate to allow a more detailed characterization of the potential health risks of N-phenyl-1-naphthylamine, dermal contact with the chemical should be avoided because of its sensitizing properties.
* [Bayer]

CARCINOGEN

POLYCYCLIC ORGANIC MATTER (POM)	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	EPA-HEN, P65-MC
PBIT_(PERS~	US - Maine Chemicals of High Concern List	Carcinogen	

Section 12 - ECOLOGICAL INFORMATION

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
This material and its container must be disposed of as hazardous waste.
Avoid release to the environment.
Refer to special instructions/ safety data sheets.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
Bayer Additin 30	No Data Available	No Data Available		
phenyl-alpha-naphthylamine	HIGH	No Data Available	LOW	LOW

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions
All waste must be handled in accordance with local, state and federal regulations.
· Consult manufacturer for recycling options and recycle where possible .
· Consult Waste Management Authority for disposal.

Section 14 - TRANSPORTATION INFORMATION

DOT:
Symbols: G Hazard class or Division: 9
Identification Numbers: UN3077 PG: III
Label Codes: 9 Special provisions: 8, 146,
335, B54,
IB8, IP3,
N20, T1,
TP33
Packaging: Exceptions: 155 Packaging: Non- bulk: 213
Packaging: Exceptions: 155 Quantity limitations: No limit
Passenger aircraft/rail:
Quantity Limitations: Cargo No limit Vessel stowage: Location: A
aircraft only:
Vessel stowage: Other: None

Hazardous materials descriptions and proper shipping names:
Environmentally hazardous substance, solid, n.o.s

Air Transport IATA:
UN/ID Number: 3077 Packing Group: III
Special provisions: A97
Cargo Only
Packing Instructions: 400 kg Maximum Qty/Pack: 956
Passenger and Cargo Passenger and Cargo
Packing Instructions: 400 kg Maximum Qty/Pack: 956
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: 30 kg G Maximum Qty/Pack: Y956
Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,
N.O.S. *(CONTAINS PHENYL-ALPHA-NAPHTHYLAMINE)

Maritime Transport IMDG:
IMDG Class: 9 IMDG Subrisk: None
UN Number: 3077 Packing Group: III
EMS Number: F-A , S-F Special provisions: 179 274 335 909
Limited Quantities: 5 kg Marine Pollutant: Yes
Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(contains phenyl-alpha-naphthylamine)

Section 15 - REGULATORY INFORMATION

Regulations for ingredients
phenyl-alpha-naphthylamine (CAS: 90-30-2) is found on the following regulatory lists;
"Canada Domestic Substances List (DSL)","OECD Representative List of High Production Volume (HPV) Chemicals","US - Connecticut Hazardous Air Pollutants","US EPA High Production Volume Program Chemical List","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory","US TSCA Section 8 (a) - Preliminary Assessment Information Rules (PAIR) - Reporting List","US TSCA Section 8 (d) - Health and Safety Data Reporting"
No data for Bayer Additin 30 (CW: 5015-47)

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE
■ Cumulative effects may result following exposure*.
■ Possible respiratory sensitiser*.
* (limited evidence).

Denmark Advisory list for selfclassification of dangerous substances
Substance CAS Suggested codes phenyl- alpha- naphthylamine 90- 30- 2 Mut3; R68 Rep3; R63 Xn; R22 R43 N; R50/53

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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