Camphor

sc-257214

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Camphor

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
C10-H16-O, 2-bornanone, 2-camphanone, 2-oxobornane, "gum camphor", "Japan camphor", "Formosa camphor", "laurel camphor", "matricaria camphor", "synthetic camphor", "norcamphor, 1, 7, 7-trimethyl-", "1, 7, 7-trimethylnorcamphor", "1, 7, 7-trimethylbicyclo[2.2.1]-2-heptanone", "1, 7, 7-trimethylbicyclo[2.2.1]heptan-2-one", "2-keto-1, 7, 7-trimethylnorcamphane", "bicyclo(2.2.1)heptan-2-one, 1, 7, 7-trimethyl-"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	3		
Toxicity:	2		
Body Contact:	2		
Reactivity:	1		
Chronic:	2		

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

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

Harmful by inhalation, in contact with skin and if swallowed.
Irritating to eyes, respiratory system and skin.
Highly flammable.

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.
■ Small oral doses of camphor or camphor containing oils may produce a sensation of warmth in the stomach; larger doses may induce nausea and vomiting.
Camphor is a central nervous system stimulant.

EYE

■ This material can cause eye irritation and damage in some persons.
■ Direct contact with camphor or camphor-containing oils may produce keratitis (inflammation of the cornea).

SKIN

■ Skin contact with the material may be harmful; systemic effects may resultfollowing absorption.
■ This material can cause inflammation of the skin oncontact in some persons.
■ The material may accentuate any pre-existing dermatitis condition.
■ Camphor is mainly a local irritant.
Symptoms might include reddening and warming of the skin.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

■ Inhalation of dusts, generated by the material, during the course of normalhandling, may be harmful.
■ The material can cause respiratory irritation in some persons.
The body's response to such irritation can cause further lung damage.
■ 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.
■ Inhalation overexposure to camphor or camphor-containing oils may produce irritation of the eyes and nose, with a risk of loss of smell.
Acute exposures affect the central nervous system, resulting in nausea, vomiting, dizziness, agitation and confusion.

CHRONIC HEALTH EFFECTS

■ Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.
Person with pre-existing convulsive disorders, eye and skin diseases, chronic respiratory disease, kidney and liver disease may be more susceptible to symptoms of exposure at potentially hazardous levels.
When the cancer promoter, croton oil, was applied concurrently with camphor to the skin of mice, twice weekly, two carcinomas, one invasive, developed in 2 of 110 animals.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
camphor	76-22-2	>97

Section 4 - FIRST AID MEASURES

SWALLOWED

· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. · Where Medical attention is not

immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

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 fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN

■ for poisons (where specific treatment regime is absent):

----------BASIC TREATMENT

· Establish a patent airway with suction where necessary.
· Watch for signs of respiratory insufficiency and assist ventilation as necessary.
Treat symptomatically.
For camphor intoxications:
· Treatment is aimed at preventing convulsions. Intravenous sodium thiopental, pentabarbital or amobarbital (Amytal) is effective. The drug should be injected slowly until the desired condition is reached, namely a degree of depression sufficient to prevent or stop convulsions and to keep the patient asleep, but not deep enough to depress respirations or blood pressure. Intramuscular sodium phenobarbitol may also be helpful. These drugs as well as diazepam, can be used to terminate camphor convulsions.
· The patient should be kept under careful observation for many hours and protected from all possible stimuli. Wakefulness, muscular twitchings and increased reflex excitability are signs that warn for the need of additional barbiturate.

Section 5 - FIRE FIGHTING MEASURES

Vapor Pressure (mmHg):	0.18 @ 20 C
Upper Explosive Limit (%):	3.5
Specific Gravity (water=1):	0.99 @ 25 C
Lower Explosive Limit (%):	0.6

EXTINGUISHING MEDIA

■ For SMALL FIRES:
Dry chemical, CO2, water spray or foam.
For LARGE FIRES:
Water-spray, fog or foam.

FIRE FIGHTING

· Alert Emergency Responders and tell them location and nature of hazard.
· Wear breathing apparatus plus protective gloves.
When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 1000 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

· Flammable solid which burns and propagates flame easily, even when partly wetted with water.
· Any source of ignition, i.e. friction, heat, sparks or flame, may cause fire or explosion.
Combustion products include: carbon monoxide (CO), carbon dioxide (CO2), other pyrolysis products typical of burning organic material.

FIRE INCOMPATIBILITY

■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids,chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION

Glasses:
Chemical goggles.
Gloves:
Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Remove all ignition sources.
· DO NOT touch or walk through spilled material.
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 all personal contact, including inhalation.
· Wear protective clothing when risk of overexposure occurs.
Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
· Do NOT cut, drill, grind or weld such containers.
· In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

RECOMMENDED STORAGE METHODS

■ For low viscosity materials and solids: Drums and jerricans must be of the non-removable head type. Where a can is to be used as an inner package, the can must have a screwed enclosure.

STORAGE REQUIREMENTS

■ FOR MINOR QUANTITIES:
· Store in an indoor fireproof cabinet or in a room of noncombustible construction
· Provide adequate portable fire-extinguishers in or near the storage area.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

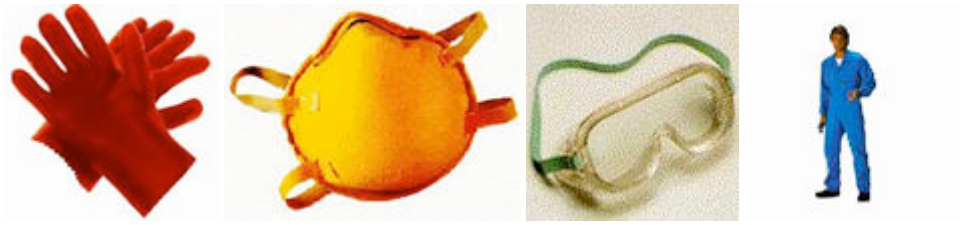
Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
US NIOSH Recommended Exposure Limits (RELs)	camphor (Camphor (synthetic))		2						
Canada - Alberta Occupational Exposure Limits	camphor (Camphor, synthetic)	2	12	3	19				
US ACGIH Threshold Limit Values (TLV)	camphor (Camphor - Synthetic)	2		3					TLV Basis: eye irritation; anosmia; upper respiratory tract irritation
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	camphor (Camphor (synthetic))	2	12	3	19				
US OSHA Permissible Exposure Levels (PELs) - Table Z1	camphor (Camphor, synthetic)		2						
Canada - British Columbia Occupational Exposure Limits	camphor (Camphor - Synthetic)	2		3					
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	camphor (Camphor, synthetic.)		2						

US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	camphor (Camphor, synthetic)		2			
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	camphor (Camphor, synthetic)		2			
US - Minnesota Permissible Exposure Limits (PELs)	camphor (Camphor, synthetic)		2			
US - Idaho - Limits for Air Contaminants	camphor (Camphor, synthetic)		2			
US - Hawaii Air Contaminant Limits	camphor (Camphor, synthetic)	0.3	2			
US - Alaska Limits for Air Contaminants	camphor (Camphor, synthetic)		2			
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	camphor (Camphor, synthetic)	2		3		
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	camphor (Camphor, synthetic)	2	12	3	18	
US - Washington Permissible exposure limits of air contaminants	camphor (Camphor (synthetic))		2		4	
US - Michigan Exposure Limits for Air Contaminants	camphor (Camphor, synthetic)		2			
Canada - Prince Edward Island Occupational Exposure Limits	camphor (Camphor - Synthetic)	2		3		TLV Basis: eye irritation; anosmia; upper respiratory tract irritation
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	camphor (Camphor, synthetic)		2			
Canada - Nova Scotia Occupational Exposure Limits	camphor (Camphor - Synthetic)	2		3		TLV Basis: eye irritation; anosmia; upper respiratory tract

						irritation
US - Oregon Permissible Exposure Limits (Z-1)	camphor (Camphor, synthetic)		2			
Canada - Northwest Territories Occupational Exposure Limits (English)	camphor (Camphor, synthetic)	2	12	3	19	
Canada - Ontario Occupational Exposure Limits	camphor (Specified (PNOS))		3 (R)			
US - California Permissible Exposure Limits for Chemical Contaminants	camphor (Camphor (synthetic))		2			

ENDOELTABLE

PERSONAL PROTECTION



RESPIRATOR

Particulate
Consult your EHS staff for recommendations

EYE

· Safety glasses with side shields.
· Chemical goggles.

HANDS/FEET

■ Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
· Contaminated gloves should be replaced.
Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
Wear physical protective gloves, eg. leather.

OTHER

· Overalls.
· Eyewash unit.
· Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.
· For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets), non sparking safety footwear.

ENGINEERING CONTROLS

■ For large scale or continuous use:
· Spark-free, earthed ventilation system, venting directly to the outside and separate from usual ventilation systems
· Provide dust collectors with explosion vents.
· 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.
Floats on water.

State	Divided solid	Molecular Weight	152.2
Melting Range (°F)	345.2- 356 sublimes	Viscosity	Not Applicable
Boiling Range (°F)	399.2 (sublimes)	Solubility in water (g/L)	Immiscible
Flash Point (°F)	150.8 (sublimes)	pH (1% solution)	Not applicable.
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	870.8 (sublimes)	Vapor Pressure (mmHg)	0.18 @ 20 C
Upper Explosive Limit (%)	3.5	Specific Gravity (water=1)	0.99 @ 25 C
Lower Explosive Limit (%)	0.6	Relative Vapor Density (air=1)	5.24
Volatile Component (%vol)	volatile @ 100C	Evaporation Rate	Not available

APPEARANCE

White flammable crystals, penetrating and characteristic odour with pungent aromatic taste, and followed by a sensation of cold. Insoluble in water, soluble in alcohols and acetone. Sublimes appreciably at room temperature, volatile in steam.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

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

STORAGE INCOMPATIBILITY

■ Camphor:
· reacts violently with strong oxidisers, chromic anhydride, potassium permanganate
· is incompatible with chlorates, naphthalene, 2-naphthol, dichlorobenzene
· may generate static charges due to low conductivity.
Avoid reaction with oxidizing agents.

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

Section 11 - TOXICOLOGICAL INFORMATION

CAMPHOR

TOXICITY AND IRRITATION

CAMPHOR:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 5000 mg/kg* *[Bronson]	
Intraperitoneal (rat) LD50: 956 mg/kg	
Subcutaneous (rat) LD50: 3040 mg/kg	
Intraperitoneal (mouse) LD50: 884 mg/kg	
Subcutaneous (mouse) LD50: 3020 mg/kg	

■ 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.
Camphor appears to have moderate acute oral toxicity, with an LD50 of 1310 mg/kg in mice. It demonstrated moderate to high toxicity in

acute inhalation studies(450 mg/m3 (72 ppm) in mice and 500 mg/m3 (80 ppm) in rats). In subchronic studies,inhaled camphor resulted in emphysema in mice at 210 mg/m3 (33 ppm) and rabbits at 33 mg/m3 (5 ppm). In 13-week subchronic dermal studies, camphor had NOAELs of 1000 mg/kg bw/day in mice and 250 mg/kg bw/day in rats. IPCS reported negative results in carcinogenicity tests for camphor. In addition, camphor was negative for genotoxicity in a microsome mutagenesis test, and a peripheral blood micronucleus assay. Reproductive toxicity studies were not available for camphor, however, in developmental toxicity studies, camphor demonstrated no foetal toxicity (with NOAELs 800 mg/kg bw/day in rats) at dose levels that resulted in maternal toxicity.
for (+/-) -camphor: [CAS No. 21368-68-3] Nil reported

Section 12 - ECOLOGICAL INFORMATION

This material and its container must be disposed of as hazardous waste.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
camphor	HIGH		LOW	MED

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

A. General Product Information
Ignitability characteristic: use EPA hazardous waste number D001 (waste code I)

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
¦ Puncture containers to prevent re-use and bury at an authorized landfill.
Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:
· Reduction
· Reuse
· Recycling
· Disposal (if all else fails)
This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.
· Recycle wherever possible.
· Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

Section 14 - TRANSPORTATION INFORMATION

DOT:
Symbols: None Hazard class or Division: 4.1
Identification Numbers: UN2717 PG: III
Label Codes: 4.1 Special provisions: A1, IB8,
IP3, T1,
TP33
Packaging: Exceptions: None Packaging: Non- bulk: 213
Packaging: Exceptions: None Quantity limitations: 25 kg
Passenger aircraft/rail:
Quantity Limitations: Cargo 100 kg Vessel stowage: Location: A
aircraft only:
Vessel stowage: Other: None
Hazardous materials descriptions and proper shipping names:
Camphor, synthetic

Air Transport IATA:

ICAO/IATA Class: 4.1 ICAO/IATA Subrisk: None
UN/ID Number: 2717 Packing Group: III
Special provisions: None
Cargo Only
Packing Instructions: 420 Maximum Qty/Pack: 100 kg
Passenger and Cargo Passenger and Cargo
Packing Instructions: 419 Maximum Qty/Pack: 25 kg

Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: Y419 Maximum Qty/Pack: 10 kg
Shipping Name: CAMPHOR SYNTHETIC

Maritime Transport IMDG:
IMDG Class: 4.1 IMDG Subrisk: None
UN Number: 2717 Packing Group: III
EMS Number: F-A , S-I Special provisions: None
Limited Quantities: 5 kg
Shipping Name: CAMPHOR synthetic

Section 15 - REGULATORY INFORMATION

camphor (CAS: 76-22-2,21368-68-3,464-49-3,464-48-2) is found on the following regulatory lists;
"Canada - Alberta Occupational Exposure Limits","Canada - British Columbia Occupational Exposure Limits","Canada - Northwest Territories Occupational Exposure Limits (English)","Canada - Nova Scotia Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens","Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)","Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits","Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances","Canada Domestic Substances List (DSL)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","International Fragrance Association (IFRA) Survey: Transparency List","US - Alaska Limits for Air Contaminants","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - Connecticut Hazardous Air Pollutants","US - Hawaii Air Contaminant Limits","US - Idaho - Limits for Air Contaminants","US - Massachusetts Oil & Hazardous Material List","US - Michigan Exposure Limits for Air Contaminants","US - Minnesota Hazardous Substance List","US - Minnesota Permissible Exposure Limits (PELs)","US - New Jersey Right to Know Hazardous Substances","US - Oregon Permissible Exposure Limits (Z-1)","US - Pennsylvania - Hazardous Substance List","US - Rhode Island Hazardous Substance List","US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants","US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants","US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants","US - Washington Permissible exposure limits of air contaminants","US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants","US ACGIH Threshold Limit Values (TLV)","US ACGIH Threshold Limit Values (TLV) - Carcinogens","US DOE Temporary Emergency Exposure Limits (TEELs)","US NIOSH Recommended Exposure Limits (RELs)","US OSHA Permissible Exposure Levels (PELs) - Table Z1","US Toxic Substances Control Act (TSCA) - Inventory","US TSCA Section 8 (a) - Preliminary Assessment Information Rules (PAIR) - Reporting List","US TSCA Section 8 (d) - Health and Safety Data Reporting"

Section 16 - OTHER INFORMATION

ND
Substance CAS Suggested codes camphor 76- 22- 2 camphor 21368- 68- 3 camphor 464- 49- 3 camphor 464- 48- 2

Ingredients with multiple CAS Nos
Ingredient Name CAS camphor 76-22-2, 21368-68-3, 464-49-3, 464-48-2

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■ 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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