Triphenyl phosphate

sc-255701

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Triphenyl phosphate

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
C18-H15-O4-P, PO(OC6H5)3, "phosphoric acid, triphenyl ester", "triphenyl ester", TPP, "triaryl phosphate", "Celluflex TPP", "Reofos TPP"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	1		
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.
Danger of cumulative effects.
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 damaging to the health of the individual.
■ Ingestion may produce nausea, vomiting, depressed appetite, abdominal cramps,and diarrhea.
■ Triphenyl phosphate (TPP) is a neurotoxic substance which produces delayed peripheral neuritis involving motor neurones.
Symptoms include flaccid paralysis, particularly of the distal muscles.

EYE

■ There is some evidence to suggest that this material can causeeye irritation and damage in some persons.
■ Direct eye contact can produce tears, eyelid twitches, pupil contraction, loss of focus, and blurred or dimmed vision.
Dilation of the pupils occasionally occurs.

SKIN

■ The material is not thought to be a skin irritant (as classified using animal models).
Abrasive damage however, may result from prolonged exposures.
■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
■ There may be sweating and muscle twitches at site of contact.
Reaction may bedelayed by hours.
■ 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 vapors, aerosols (mists, fumes) or dusts, generated by the material during the course of normal handling, may be harmful.
■ The material is not thought to produce respiratory irritation (as classified using animal models).
Nevertheless inhalation of dusts, or fume, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
■ 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 may produce neurological disturbances which may progress to delayed neurotoxicity characterised by ataxia and tremors.
Symptoms of inhalation exposure to triphenyl phosphate (TPP) may include headache, sore throat and shortness of breath.
■ Organic phosphates are very stable and highly hazardous.
There are a number of effects they can have on the body, including excitement of the central nervous system, and irritation of the skin and respiratory tract.

CHRONIC HEALTH EFFECTS

■ Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems.
There is limited evidence that, skin contact with this product is more likely to cause a sensitization reaction in some persons compared to the general population.
Repeated or prolonged exposures to cholinesterase inhibitors produce symptoms similar to acute effects. In addition workers exposed repeatedly to these substances may exhibit impaired memory and loss of concentration, severe depression and acute psychosis, irritability, confusion, apathy, emotional liability, speech difficulties, headache, spatial disorientation, delayed reaction times, sleepwalking, drowsiness or insomnia.
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.
Epidemiological studies completed in 1977 and 1985 of current and former workers at a plant, where natural and synthetic triaryl phosphate esters were manufactured, did not find any unusual patterns of mortality or disease. In 30-day feeding trials with triphenyl phosphate (TPP), dose rate 750 mg/kg, both male and female rats showed hepatic enlargement and discoloured livers [Chemplex]. Signs and symptoms of cholinesterase inhibition should be anticipated even if these are not readily apparent in exposed individuals. In a study involving 32 men employed for 2-10 years (average 7.4 years) in the manufacture of TPP, there was no evidence of adverse clinical effects (dermatitis, eye and respiratory tract irritation, unexplained illness, neurological disease) at time-weighted average exposures of 3.5 mg/m3. A slight but statistically significant reduction in erythrocyte cholinesterase activity was evident in six workers. Plasma cholinesterase was within the normal range. TPP does not appear to accumulate in human tissues. Studies with cultured human cells show in vitro cytotoxicity and some evidence of in vitro immunotoxicity. The congener tricresyl phosphate, produces dermatological allergy in humans and it is thought that TPP might also produce similar symptoms; however, no rigorous data has been published, to date, implicating TPP exposure with immunosuppression, or allergic or sensitisation reactions.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
triphenyl phosphate	115-86-6	>99

Section 4 - FIRST AID MEASURES

SWALLOWED
■ If swallowed: · Contact a Poisons Information Center or a doctor at once. · If swallowed, activated charcoal may be advised.

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 product comes in contact with skin: · Contact a Poisons Information Center or a doctor. · DO NOT allow clothing wet with product to remain in contact with skin, strip all contaminated clothing including boots.

INHALED
· If spray mist, vapor are inhaled, remove from contaminated area. · Contact a Poisons Information Center or a doctor at once.

NOTES TO PHYSICIAN
· Most organophosphate compounds are rapidly well absorbed from the skin, conjunctiva, gastro-intestinal tract and lungs.
· They are detoxified by Cytochrome P450-mediated monoxygenases in the liver but some metabolites are more toxic than parent compounds.

Section 5 - FIRE FIGHTING MEASURES

Vapor Pressure (mmHg):	0.15 @ 150 C
Upper Explosive Limit (%):	Not applicable
Specific Gravity (water=1):	1.268 @ 60 C
Lower Explosive Limit (%):	Not applicable

EXTINGUISHING MEDIA
· Foam.
· Dry chemical powder.

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 100 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
· Combustible solid which burns but propagates flame with difficulty.
· 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.
Combustion products include: carbon monoxide (CO), carbon dioxide (CO2), phosphorus oxides (POx), 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.
· Clean up all spills immediately.
· Avoid contact with skin and eyes.

· Control personal contact by using protective equipment.
· Use dry clean up procedures and avoid generating dust.
· Place in a suitable, labelled container for waste disposal.
Environmental hazard - contain spillage.
MAJOR SPILLS
■ Environmental hazard - contain spillage.
Moderate hazard.
· CAUTION: Advise personnel in area.
· 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 exposure 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

■ Glass container.
· Polyethylene or polypropylene container.
· Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

■ Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

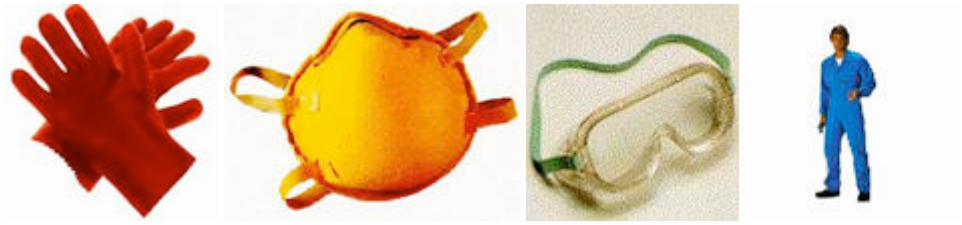
Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
Canada - Alberta Occupational Exposure Limits	triphenyl phosphate (Triphenyl phosphate)		3						
Canada - British Columbia Occupational Exposure Limits	triphenyl phosphate (Triphenyl phosphate)		3						
US NIOSH Recommended Exposure Limits (RELs)	triphenyl phosphate (Triphenyl phosphate)		3						
US OSHA Permissible Exposure Levels (PELs) - Table Z1	triphenyl phosphate (Triphenyl phosphate)		3						
US ACGIH Threshold Limit Values (TLV)	triphenyl phosphate (Triphenyl phosphate)		3						TLV Basis: cholinesterase inhibition
US - Minnesota Permissible Exposure Limits (PELs)	triphenyl phosphate (Triphenyl phosphate)		3						
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional	triphenyl phosphate (Triphenyl phosphate)		3						

Limits for Air Contaminants							
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	triphenyl phosphate (Triphenyl phosphate)		3				
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	triphenyl phosphate (Triphenyl phosphate)		3				
US - California Permissible Exposure Limits for Chemical Contaminants	triphenyl phosphate (Triphenyl phosphate; TPP)		3				
US - Idaho - Limits for Air Contaminants	triphenyl phosphate (Triphenyl phosphate)		3				
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	triphenyl phosphate (Triphenyl phosphate)		3				
US - Hawaii Air Contaminant Limits	triphenyl phosphate (Triphenyl phosphate)		3		6		
US - Alaska Limits for Air Contaminants	triphenyl phosphate (Triphenyl phosphate)		3				
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	triphenyl phosphate (Triphenyl phosphate)		3		6		
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	triphenyl phosphate (Triphenyl phosphate)	-	3	-	6		
US - Washington Permissible exposure limits of air contaminants	triphenyl phosphate (Triphenyl phosphate)		3		6		
US - Michigan Exposure Limits for Air Contaminants	triphenyl phosphate (Triphenyl phosphate)		3				
Canada - Prince Edward Island Occupational Exposure Limits	triphenyl phosphate (Triphenyl phosphate)		3				TLV Basis: cholinesterase inhibition

US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	triphenyl phosphate (Triphenyl phosphate)		3		
Canada - Nova Scotia Occupational Exposure Limits	triphenyl phosphate (Triphenyl phosphate)		3		TLV Basis: cholinesterase inhibition
US - Oregon Permissible Exposure Limits (Z-1)	triphenyl phosphate (Triphenyl phosphate)	-	3		
Canada - Northwest Territories Occupational Exposure Limits (English)	triphenyl phosphate (Triphenyl phosphate)		3	6	

ENDOELTABLE

PERSONAL PROTECTION



RESPIRATOR

•Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

EYE

· Safety glasses with side shields.
· Chemical goggles.

HANDS/FEET

■ NOTE: The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
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, AS/NZS 2161.1 or national equivalent).
· 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, AS/NZS 2161.10.1 or national equivalent) 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, AS/NZS 2161.10.1 or national equivalent) 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.
Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.
· polychloroprene
· nitrile rubber
· butyl rubber
· fluorocaoutchouc
· polyvinyl chloride
Gloves should be examined for wear and/ or degradation constantly.

OTHER

· Overalls.
· P.V.C. apron.
· Barrier cream.
· Skin cleansing cream.
· Eye wash unit.

ENGINEERING CONTROLS
· 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	326.29
Melting Range (°F)	122	Viscosity	Not Applicable
Boiling Range (°F)	473 @ 1.47 kPa	Solubility in water (g/L)	Immiscible
Flash Point (°F)	428	pH (1% solution)	Not applicable.
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available.	Vapor Pressure (mmHg)	0.15 @ 150 C
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	1.268 @ 60 C
Lower Explosive Limit (%)	Not applicable	Relative Vapor Density (air=1)	Not applicable.
Volatile Component (%vol)	Not applicable.	Evaporation Rate	Not applicable

APPEARANCE
White crystalline flakes or colourless crystalline powder. Odourless or faint phenolic smell. Insoluble in water. Soluble in benzene, chloroform, ether, acetone.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY
· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY
■ A number of phosphate and thiophosphate esters are of limited thermal stability and undergo highly exothermic self-accelerating decomposition reactions which may be catalyzed by impurities. The potential hazards can be reduced by appropriate thermal control measures.
Avoid reaction with oxidizing agents.
· Aryl phosphates will hydrolyse with water at elevated temperatures. Hydrolysis is accelerated by acids or bases.
· Vinyl-based resins may be degraded by aryl phosphates.

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

Section 11 - TOXICOLOGICAL INFORMATION

triphenyl phosphate

TOXICITY AND IRRITATION
TRIPHENYL PHOSPHATE:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (human) LDLo: 50 mg/kg*	Nil Reported
Oral (rat) LD50: 3500 mg/kg	[Genium]*
Oral (rat) LDLo: 3000 mg/kg*	

CARCINOGEN

Triphenyl phosphate	US ACGIH Threshold Limit Values (TLV) -	Carcinogen Category	A4

	Carcinogens		
triphenyl phosphate	US - Rhode Island Hazardous Substance List	IARC	
TWAPPM~	US - Maine Chemicals of High Concern List	Carcinogen	A4
SKIN			
triphenyl phosphate	US - Hawaii Air Contaminant Limits - Skin Designation	Skin Designation	X
triphenyl phosphate	US - Oregon Permissible Exposure Limits (Z2) - Skin	Skin	X
triphenyl phosphate	US - California Permissible Exposure Limits for Chemical Contaminants - Skin	Skin	X
triphenyl phosphate	US - California Permissible Exposure Limits for Chemical Contaminants - Skin	Skin	S

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
triphenyl phosphate	HIGH	No Data Available	LOW	MED

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions
All waste must be handled in accordance with local, state and federal regulations.
¦ 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: 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 S.M.P.: Severe
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: 956 Maximum Qty/Pack: 400 kg
Passenger and Cargo Passenger and Cargo
Packing Instructions: Y956 Maximum Qty/Pack: 400 kg
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: 956 Maximum Qty/Pack: 30 kg G
Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,
N.O.S. *(CONTAINS TRIPHENYL PHOSPHATE)

Maritime Transport IMDG:

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

Section 15 - REGULATORY INFORMATION

triphenyl phosphate (CAS: 115-86-6) 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 Ingredient Disclosure List (SOR/88-64)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","International Council of Chemical Associations (ICCA) - High Production Volume List","US - Alaska Limits for Air Contaminants","US - California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substances for which emissions must be quantified","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - California Permissible Exposure Limits for Chemical Contaminants","US - Connecticut Hazardous Air Pollutants","US - Hawaii Air Contaminant Limits","US - Idaho - Limits for Air Contaminants","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 Department of Transportation (DOT) Marine Pollutants - Appendix B","US DOE Temporary Emergency Exposure Limits (TEELs)","US EPA High Production Volume Program Chemical List","US EPA Master Testing List - Index I Chemicals Listed","US FDA Indirect Food Additives: Adhesives and Components of Coatings - Substances for Use Only as Components of Adhesives - Adhesives","US NIOSH Recommended Exposure Limits (RELs)","US OSHA Permissible Exposure Levels (PELs) - Table Z1","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory","US TSCA Section 8 (d) - Health and Safety Data Reporting"

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE

■ Skin contact and/or ingestion may produce health damage*.
■ May produce discomfort of the eyes*.
■ Possible skin sensitiser*.
* (limited evidence).

Denmark Advisory list for selfclassification of dangerous substances

Substance CAS Suggested codes triphenyl phosphate 115- 86- 6 Mut3; R68 Rep3; R63 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.

Issue Date: Mar-30-2011

Print Date:Jul-30-2011