Combined Systems MODEL 6340-OCV Aerosol Grenade

Winchester Australia Ltd

Chemwatch Hazard Alert Code: **3**

Chemwatch: **5237-38**
Version No: **3.1.1.1**
Safety Data Sheet according to WHS and ADG requirements

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SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product name	Combined Systems MODEL 6340-OCV Aerosol Grenade
Synonyms	Not Available
Proper shipping name	TEAR GAS CANDLES
Other means of identification	Not Available

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Use according to manufacturer's directions. Usually used indoors in enclosed area to cause pain and discomfort to those who come into contact with the released contents.

Details of the supplier of the safety data sheet

Registered company name	**Winchester Australia Ltd**
Address	65 Hays Road Moolap, Geelong VIC 3224 Australia
Telephone	+61 3 5245 2400
Fax	+61 3 5248 2409
Website	Not Available
Email	aedmondson@olin.com.au

Emergency telephone number

Association / Organisation	**Winchester Australia Ltd**
Emergency telephone numbers	**0418 158 337 All hours**
Other emergency telephone numbers	**Not Available**

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

HAZARDOUS CHEMICAL. DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability	1		
Toxicity	2		
Body Contact	2		
Reactivity	3		
Chronic	0		

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

Poisons Schedule	Not Applicable
Classification [1]	Self Reactive Type A, Gas under Pressure (Compressed gas), Acute Toxicity (Oral) Category 4, Eye Irritation Category 2A
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI*

Label elements

Hazard pictogram(s)

SIGNAL WORD	**DANGER**

Hazard statement(s)

H240	Heating may cause an explosion.
H280	Contains gas under pressure; may explode if heated.

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H302	Harmful if swallowed.
H319	Causes serious eye irritation.

Precautionary statement(s) Prevention

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P234	Keep only in original container.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P220	Keep/Store away from clothing/organic material/combustible materials.
P270	Do not eat, drink or smoke when using this product.

Precautionary statement(s) Response

P370+P380+P375	In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.
P301+P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330	Rinse mouth.
P370+P378	In case of fire: Use alcohol resistant foam or fine spray/water fog for extinction.

Precautionary statement(s) Storage

P403+P235	Store in a well-ventilated place. Keep cool.
P410+P403	Protect from sunlight. Store in a well-ventilated place.
P411	Store at temperatures not exceeding 30°C/86°F (see storage requirements on SDS).
P420	Store away from other materials.

Precautionary statement(s) Disposal

P501	Dispose of contents/container in accordance with local regulations.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
811-97-2	50-100	1,1,1,2-tetrafluoroethane
68917-78-2	<10	Capsicum annum oleoresin
7778-74-7	<1	potassium perchlorate
10294-40-3	<1	barium chromate
592-87-0	<0.1	lead thiocyanate

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	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. ▸ Seek medical attention without delay; if pain persists or recurs seek medical attention. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin contact occurs: ▸ Immediately remove all contaminated clothing, including footwear. ▸ Flush skin and hair with running water (and soap if available). ▸ Seek medical attention in event of irritation.
Inhalation	▸ If fumes or combustion products are inhaled remove from contaminated area. ▸ Lay patient down. Keep warm and rested. ▸ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▸ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▸ Transport to hospital, or doctor.
Ingestion	▸ If swallowed do **NOT** induce vomiting. ▸ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▸ Observe the patient carefully. ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▸ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▸ Seek medical advice.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

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SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

SMALL FIRE:
- Water spray, dry chemical or CO2

LARGE FIRE:
- Water spray or fog.

Special hazards arising from the substrate or mixture

Fire Incompatibility	▸ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

Advice for firefighters

Fire Fighting	▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear full body protective clothing with breathing apparatus. ▸ Prevent, by any means available, spillage from entering drains or water course. ▸ Fight fire from a safe distance, with adequate cover. ▸ If safe, switch off electrical equipment until vapour fire hazard removed. ▸ Use water delivered as a fine spray to control fire and cool adjacent area. ▸ Avoid spraying water onto liquid pools. ▸ **DO NOT** approach containers suspected to be hot. ▸ Cool fire exposed containers with water spray from a protected location. ▸ If safe to do so, remove containers from path of fire.
Fire/Explosion Hazard	Decomposition may produce toxic fumes of: carbon monoxide (CO) carbon dioxide (CO2) hydrogen chloride phosgene hydrogen fluoride other pyrolysis products typical of burning organic material. |Can explode under fire conditions.|Individual devices will randomly explode. Will not mass explode if multiple devices are involved.|In unusual cases, shrapnel may be thrown from exploding devices under containment.
HAZCHEM	2X

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	▸ Clean up all spills immediately. ▸ Avoid breathing vapours and contact with skin and eyes. ▸ Wear protective clothing, impervious gloves and safety glasses. ▸ Shut off all possible sources of ignition and increase ventilation. ▸ Wipe up. ▸ If safe, damaged cans should be placed in a container outdoors, away from all ignition sources, until pressure has dissipated. ▸ Undamaged cans should be gathered and stowed safely.
Major Spills	▸ Clear area of personnel and move upwind. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ May be violently or explosively reactive. ▸ Wear breathing apparatus plus protective gloves. ▸ Prevent, by any means available, spillage from entering drains or water courses ▸ No smoking, naked lights or ignition sources. ▸ Increase ventilation. ▸ Stop leak if safe to do so. ▸ Water spray or fog may be used to disperse / absorb vapour. ▸ Absorb or cover spill with sand, earth, inert materials or vermiculite. ▸ If safe, damaged cans should be placed in a container outdoors, away from ignition sources, until pressure has dissipated. ▸ Undamaged cans should be gathered and stowed safely. ▸ Collect residues and seal in labelled drums for disposal.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	▸ Avoid all personal contact, including inhalation. ▸ Wear protective clothing when risk of exposure occurs. ▸ Use in a well-ventilated area. ▸ Prevent concentration in hollows and sumps. ▸ **DO NOT** enter confined spaces until atmosphere has been checked. ▸ **DO NOT** allow material to contact humans, exposed food or food utensils. ▸ Avoid contact with incompatible materials. ▸ When handling, **DO NOT** eat, drink or smoke. ▸ Keep containers securely sealed when not in use.

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	▸ Avoid physical damage to containers. ▸ Always wash hands with soap and water after handling. ▸ Work clothes should be laundered separately. Launder contaminated clothing before re-use. ▸ Use good occupational work practice. ▸ Observe manufacturer's storage and handling recommendations contained within this SDS. ▸ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
Other information	▸ Store cases in a well ventilated magazine licensed for the appropriate Class, Division and Compatibility Group. ▸ Rotate stock to prevent ageing. Use on FIFO (first in-first out) basis. ▸ Observe manufacturer's storage and handling recommendations contained within this SDS. ▸ Store in a cool place in original containers. ▸ Keep containers securely sealed. ▸ No smoking, naked lights, heat or ignition sources. ▸ Store in an isolated area away from other materials. ▸ Keep storage area free of debris, waste and combustibles. ▸ Protect containers against physical damage. ▸ Check regularly for spills and leaks **NOTE**: If explosives need to be destroyed contact the Competent Authority.

Conditions for safe storage, including any incompatibilities

Suitable container	Store in original containers.
Storage incompatibility	▸ Explosion hazard may follow contact with incompatible materials ▸ Avoid reaction with oxidising agents ▸ Avoid strong acids, acid chlorides, acid anhydrides and chloroformates. ▸ Avoid storage with reducing agents. ▸ Contact with acids produces toxic fumes

X X X X X X X

X — Must not be stored together
0 — May be stored together with specific preventions
+ — May be stored together

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	1,1,1,2-tetrafluoroethane	1,1,1,2-Tetrafluoroethane	1000 ppm / 4240 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	barium chromate	Chromium (VI) compounds (as Cr), certain water insoluble	0.05 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	lead thiocyanate	Lead, inorganic dusts & fumes (as Pb)	0.05 mg/m3	Not Available	Not Available	Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
1,1,1,2-tetrafluoroethane	HFC 134a; (Tetrafluoroethane, 1,1,1,2-)	Not Available	Not Available	Not Available
potassium perchlorate	Potassium perchlorate	6.3 mg/m3	69 mg/m3	420 mg/m3
barium chromate	Barium chromate	0.15 mg/m3	13 mg/m3	77 mg/m3

Ingredient	Original IDLH	Revised IDLH
1,1,1,2-tetrafluoroethane	Not Available	Not Available
Capsicum annum oleoresin	Not Available	Not Available
potassium perchlorate	Not Available	Not Available
barium chromate	Not Available	Not Available
lead thiocyanate	100 mg/m3	Not Available

MATERIAL DATA

Exposure controls

Appropriate engineering controls	▸ Generally not applicable.
Personal protection	

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Eye and face protection	▸ Safety glasses with side shields. ▸ Chemical goggles. ▸ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]
Skin protection	See Hand protection below
Hands/feet protection	▸ Wear chemical protective gloves, e.g. PVC. ▸ Wear safety footwear or safety gumboots, e.g. Rubber
Body protection	See Other protection below
Other protection	▸ Overalls. ▸ Eyewash unit. ▸ Barrier cream. ▸ Skin cleansing cream.

Respiratory protection

Type AX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.
Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	AX-AUS P2	-	AX-PAPR-AUS / Class 1 P2
up to 50 x ES	-	AX-AUS / Class 1 P2	-
up to 100 x ES	-	AX-2 P2	AX-PAPR-2 P2 ^

^ - Full-face
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Compressed gas with characteristic irritating odour, insoluble in water. Supplied in a grey aerosol container.

Physical state	Compressed Gas	**Relative density (Water = 1)**	1.226
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Applicable
pH (as supplied)	Not Applicable	**Decomposition temperature**	Not Available
Melting point / freezing point (°C)	Not Available	**Viscosity (cSt)**	Not Applicable
Initial boiling point and boiling range (°C)	Not Available	**Molecular weight (g/mol)**	Not Applicable
Flash point (°C)	Not Applicable	**Taste**	Not Available
Evaporation rate	Not Applicable	**Explosive properties**	Not Available
Flammability	Not Applicable	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Applicable	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	Not Applicable	**Volatile Component (%vol)**	Not Available
Vapour pressure (kPa)	Not Available	**Gas group**	Not Available
Solubility in water	Immiscible	**pH as a solution (1%)**	Not Applicable
Vapour density (Air = 1)	Not Available	**VOC g/L**	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable. ▸ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

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Information on toxicological effects

Inhaled	Not normally a hazard due to physical form of product. Capsaicin temporarily causes bronchoconstriction, coughing, nausea, and incoordination in the upper body in humans following inhalation. Capsaicin administered in a nasal spray resulted in human volunteers experiencing greatly increased nasal discharge and lacrimation, and burning sensation.
Ingestion	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. Not normally a hazard due to physical form of product.
Skin Contact	Limited evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. Not normally a hazard due to physical form of product. Researchers applied 0.8 g of gel containing 0.075% of capsaicin to the skin of six human volunteers for 8 hours of exposure. They then calculated the average absorbed dose as 22.65 ug/cm2 with a standard deviation of 3.73 ug/cm2. Topical application of pure capsaicin to the skin of mice resulted in peak plasma concentrations occurring 4 to 12 hours later, and capsaicin was detectable in the blood 24 hours after dosing. Doses of 5.12 mg/mouse/week led to maximum plasma concentrations of 51.5 ng/ml in male and 84.8 ng/ml in female mice Capsaicin,caused erythema and burning, but not vesication when applied to the skin [Smith et al, J. Invest. Derm., 1970, 54,170] Administration may cause intense pain in humans and experimental animals. Prolonged treatment causes insensitivity to painful stimuli. In new-born rats it induces selective degeneration of certain primary sensory neurones which mediate chemogenic pain. [Merck Index] Toxic effects may result from skin absorption
Eye	Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur. Not normally a hazard due to physical form of product.
Chronic	Limited evidence shows that inhalation of the material is capable of inducing a sensitisation reaction in a significant number of individuals at a greater frequency than would be expected from the response of a normal population. Pulmonary sensitisation, resulting in hyperactive airway dysfunction and pulmonary allergy may be accompanied by fatigue, malaise and aching. Significant symptoms of exposure may persist for extended periods, even after exposure ceases. Symptoms can be activated by a variety of nonspecific environmental stimuli such as automobile exhaust, perfumes and passive smoking. There exists limited evidence that shows that skin contact with the material is capable either of inducing a sensitisation reaction in a significant number of individuals, and/or of producing positive response in experimental animals. Chronic feeding studies in rodents consistently demonstrated weight loss when animals were either dosed via gavage or when the capsaicin was mixed with the food. However, another feeding study showed no such effects using ground red pepper *Capsicum annuum* at up to 10% of the total diet in mice. Different diets affected the toxic effects of capsaicin on the liver and spleen in rabbits, such that effects were greatest in animals fed the high-fat diets. In contrast, animals fed high protein, high carbohydrate diets showed no effects relative to controls. Test animals were given 5 g/kg of “red pepper” daily for one year. Researchers applied pure capsaicin topically to the backs of mice once weekly for 26 weeks. Doses of 0.64, 1.28, and 2.56 mg/mouse/week resulted in skin abnormalities including inflammation, epidermal crusts, epidermis thickening, and ulcerations. Other signs included gross lesions in the stomach, salivary glands, and oral cavity. Capsaicin applied to the hind-paws of rats twice daily for 10 weeks led to increased pain sensitivity in the animals exposed to the highest dose (0.75% capsaicin) although this sensitivity decreased with time. Rats treated with a lower dose (0.075% capsaicin) demonstrated reduced function in certain cells known as C fibers following prolonged dosing,but this impairment disappeared after treatment stopped. Chronic exposure to capsaicin in a factory setting resulted in cough thresholds that were related to the extent of exposure on the job. Workers exposed to capsaicin demonstrated a bimodal cough threshold response that was not observed in unexposed workers, who showed a unimodal response. Some exposed workers were much more sensitive to capsaicin than other exposed workers A condition known as “Hunan hand”, which is a form of contact dermatitis, has been noted in workers handling peppers |Explosive components are completely sealed within the container. Under normal handling of this product, no exposure to harmful materials will occur. Product may produce physical injury if mishandled. Treatment of these injuries should be based on the blast and compression effects.|In use primary effect is shortness of breath, pain and discomfort.

	TOXICITY	IRRITATION
Combined Systems MODEL 6340-OCV Aerosol Grenade	Not Available	Not Available
1,1,1,2-tetrafluoroethane	Inhalation (rat) LC50: 1500 mg/l/4h[2]	Not Available
Capsicum annum oleoresin	dermal (rat) LD50: >2500 mg/kg[2]	Not Available
	Inhalation (rat) LC50: >10 mg/l/4h*[2]	
	Oral (rat) LD50: >3000 mg/kg[2]	
potassium perchlorate	Not Available	Eye: adverse effect observed (irritating)[1]
		Skin: no adverse effect observed (not irritating)[1]
barium chromate	dermal (rat) LD50: >2000 mg/kg[1]	Eye: no adverse effect observed (not irritating)[1]
	Oral (rat) LD50: 52 mg/kg[1]	Skin: no adverse effect observed (not irritating)[1]

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lead thiocyanate	**TOXICITY**	**IRRITATION**
	Not Available	Not Available

Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*

1,1,1,2-TETRAFLUOROETHANE	Disinfection by products (DBPs) re formed when disinfectants such as chlorine, chloramine, and ozone react with organic and inorganic matter in water. The observations that some DBPs such as trihalomethanes (THMs), di-/trichloroacetic acids, and 3-chloro-4-(dichloromethyl)-5-hydroxy-2(5H)-furanone (MX) are carcinogenic in animal studies have raised public concern over the possible adverse health effects of DBPs. To date, several hundred DBPs have been identified. Numerous haloalkanes and haloalkenes have been tested for carcinogenic and mutagenic activities. n general, the genotoxic potential is dependent on the nature, number, and position of halogen(s) and the molecular size of the compound. Short-chain monohalogenated (excluding fluorine) alkanes and alkenes are potential direct-acting alkylating agents, particularly if the halogen is at the terminal end of the carbon chain or at an allylic position. Dihalogenated alkanes are also potential alkylating or cross-linking agents (either directly or after GSH conjugation),particularly if they are vicinally substituted (e.g., 1,2-dihaloalkane) or substituted at the two terminal ends of a short to medium-size (e.g., 2-7) alkyl moiety (i.e., alpha, omega-dihaloalkane). Fully halogenated haloalkanes tend to act by free radical or nongenotoxic mechanisms (such as generating peroxisome-proliferative intermediates) or undergo reductive dehalogenation to yield haloalkenes that in turn could be activated to epoxides. Haloalkenes are of concern because of potential to generate genotoxic intermediates after epoxidation. The concern for haloalkenes may be diminished if the double bond is internal or sterically hindered. The cancer concern levels of the 14 haloalkanes and haloalkenes, have been rated based on available screening cancer bioassay (pulmonary adenoma assay) and genotoxicity data. Five brominated and iodinated methane and ethane derivatives are given a moderate rating. Beyond the fact that bromine and iodine are better leaving groups than chlorine, there is also evidence that brominated THMs may be preferentially activated by a theta-class glutathione S-transferase (GSTT1-1) to mutagens in Salmonella even at low substrate concentrations Furthermore, there are human carcinogenicity implications because of polymorphism in GSTT1-1. Human subpopulations with expressed GSTT1-1 may be at a greater risk to brominate THMs than humans who lack the gene. Six, two, and one haloalkanes/ haloalkene(s) are given low-moderate, marginal, and low concern, respectively. * with added oxygen - ZhongHao New Chemical Materials MSDS Excessive concentration can have a narcotic effect; inhalation of high concentrations of decomposition products can cause lung oedema.
CAPSICUM ANNUM OLEORESIN	For capsaicin (as a congener of the capsaicinoids) High subcutaneous doses of capsaicin were not teratogenic in rats. However, there was evidence that capsaicin crosses the placenta and exerts a toxic effect on the peripheral nerves of foetuses, provoking extensive depletion of substance P from immunoreactive nerve fibre from the dorsal horn of the spinal cord. Prenatal treatment of rats with high subcutaneous doses of capsaicin (50 mg/kg) caused functional neuronal defects; whereas neonatal treatment caused retarded body growth and sexual maturation, decreased mating frequency and reduced gestations. Published data on potential mutagenicity and carcinogenicity of capsaicin were inconclusive. Repeated exposure leads to desensitization. Experimenters who desensitized their tongues to capsaicin found that their taste thresholds for other pungent compounds, such as ginger and mustard, also increased, but their ability to perceive tactile stimuli or basic tastes, such as sweet, salt, sour, or bitter, was not affected. Capsaicin apparently acts via a receptive site in the nociceptor. This site seems also to be involved in the perception of temperatures which are dangerously high (perhaps explaining why pungent foods are perceived as 'hot'). Capsaicin kills the nociceptor, or destroys its peripheral terminals. This has been exploited in the topical use of capsaicin as an analgesic to treat conditions such as shingles and rheumatoid arthritis. The biological actions of capsaicin are primarily attributable to release of the neuropeptide substance P, calcitonin gene–related peptide (CGRP), and neurokinin A from sensory neurons. These transmitters from primary sensory neurons communicate with other cell types. They produce alterations in the airway mucosa and neurogenic inflammation of the respiratory epithelium, airway blood vessels, glands, and smooth muscle. Alterations in multiple effector organs lead to bronchoconstriction, increased vascular permeability, oedema of the tracheobronchial mucosa, elevated mucosal secretion, and neutrophil chemotaxis. Capsaicin-induced effects of bronchoconstriction, vasodilation, and plasma protein extravasation are mediated by substance P. In addition, substance P can cause bronchoconstriction through stimulation of c-fibers in pulmonary and bronchial circulation **Acute toxicity:** Capsaicin can cause skin irritation. Little absorption occurs across the skin. Oedema following dermal exposure in mouse ears in several studies peaked within 1 hour of application, although subsequent applications produced less of a response. Capsaicin can severely irritate the eyes, and was found to cause corneal lesions in rats and mice Airway resistance increased following inhalation of capsaicin in both mild asthmatics and non-asthmatic people at doses that are below those eliciting the cough response People suffering from asthma and other respiratory diseases may be more sensitive to capsaicin than other individuals. A more recent study suggested that people with sensory hyper-reactivity have enhanced sensitivity to capsaicin. This was associated with increased levels of serum nerve growth factors in nasal lavage fluid. Capsaicin produces its repellent effect when it contacts either eye or respiratory tract mucus membranes. In animals signs of acute exposure include coughing, inability to vocalise, and temporary blindness. Mice and rats dosed orally with 96 to 200 mg/kg capsaicin demonstrated immediate salivation, convulsions, reddening of the skin, and dyspnea, or labored breathing. Animals either died within 26 minutes of dosing, or showed no further symptoms 24 hours after dosing. Capsaicin fed to rats was rapidly absorbed from the stomach, with 85% of a 3 mg dose absorbed within 3 hours Inhalation exposure to capsaicinoids in pepper sprays damaged rat bronchial, tracheal, nasal, and alveolar cells, causing acute inflammation. **Carcinogenicity**: Several researchers reviewed evidence that capsaicin is carcinogenic in animals and found that the evidence was inconclusive. Researchers have demonstrated that capsaicin is mutagenic and genotoxic in some studies using bacterial and rodent models but not in others. Researchers applied pure *trans*-capsaicin to the dorsal skin of mice weekly for 26 weeks at rates of 0.64, 1.28, or 2.56 mg/ mouse/week. No increase of neoplastic skin lesions or other abnormal skin growth was noted over control mice. A lifetime diet containing 0.03% capsaicin fed to mice led to slight increases in benign tumors of the caecum Capsaicinoids fed to male mice at 1% of the diet for 79 weeks resulted in kidney lesions in male mice. However, female mice fed a diet of 0.25% capsaicinoids for 83 weeks developed fewer tumors compared with controls. Hepatocellular neoplasms, or abnormal growths in the liver, also occurred less often in male and female mice fed greater concentrations of capsaicinoids in their diet. **Genetic toxicity:** Capsaicin has demonstrated mutagenic effects in some research but not in other studies. Impurities in the extract may be responsible for mutagenic effects because the studies that failed to demonstrate mutagenic effects used pure capsaicin. People consuming 90-250 mg of capsaicin per day (in the form of jalapeno peppers) had a greater risk of gastric cancer compared with people who consumed less capsaicin (0-29.9 mg capsaicin per day). Capsaicin exerted an anti-proliferative effect on human prostate cancer cells in vitro in a dose-dependent manner, completely halting proliferation at 5 x 10-4 mol/L. **Distribution:** Rats injected intravenously accumulated capsaicin primarily in the brain and spinal cord 3 minutes after dosing, with lower levels found in the liver and blood. Ten minutes after dosing, the greatest concentrations remained in the spinal cord. When the capsaicin was injected subcutaneously, rat blood concentrations peaked 5 hours following dosing, and brain and spinal cord tissue concentrations were somewhat lower. Kidneys contained the greatest concentrations and liver concentrations were low. Researchers detected capsaicin in all tissues 10 minutes following dosing but residues were undetectable in any tissues 17 hours later. The researchers concluded that the low concentrations in the liver were due to metabolic breakdown of the capsaicin **Metabolism:** Metabolism occurs primarily by the liver in the rat Metabolism of capsaicin by P450 enzymes may follow a number of pathways and produce a variety of metabolites, some of which may be associated with increased toxicity. Research using human, rat, mouse, goat, and rabbit liver and lung microsomes demonstrated that metabolism rates were much greater in liver microsomes compared with lung microsomes for each species. Although the same metabolites were produced, the relative amounts of each metabolite were species-dependent.

Continued...

	Excretion: • Less than 10% of an oral dose of capsaicin given to rats was excreted unchanged 48 hours after dosing Capsaicin is representative of the capsaicinoids although each may differ in potency Capsaicin is the main capsaicinoid in chili peppers, followed by dihydrocapsaicin. These two compounds are also about twice as potent to the taste and nerves as the minor capsaicinoids nordihydrocapsaicin, homodihydrocapsaicin, and homocapsaicin. The pharmacological action and toxicology of capsaicin has been well developed in both human and animal studies. Capsaicin is highly toxic by all routes of administration except rectal and dermal. Intravenous doses cause convulsions within 5 secs and death within 2 to 5 minutes. Toxic signs include excitement, convulsions with limbs extended, dyspnea and death due to respiratory failure. Capsaicin's acute toxicity in mice falls between that of nicotine and strychnine, two well known potent poisons. The toxicity of the oleoresin which contains capsaicin, in female mice, is around 4 times more toxic than capsaicin alone. Guinea pigs appear to more susceptible than rats and mice whilst hamsters and rabbits were less vulnerable to the toxic effects both capsaicin Inhalation of capsaicin is consistent with the induction of the Kratshmer reflex, which is apnoea, bradycardia, and a biphasic fall and rise in aortic blood pressure. Exposure to capsaicin cause bronchoconstriction in animals and humans, the release of substance P, a neuropeptide, from sensory nerve terminals and mucosal oedema. The pulmonary effects appear to be species dependent. In guinea pigs, intravenous and intra-arterial administration causes bronchoconstriction. The bronchoconstriction in dog and cat after intravenous capsaicin depends on vagal cholinergic reflex, as does bronchoconstriction in the cat after aerosol exposure. In guinea pig, bronchoconstriction following aerosol exposure suggest both a vagal-cholinergic and non-cholinergic local axon reflex The burning and painful sensations associated with capsaicin result from its chemical interaction with sensory neurons. Capsaicin triggers the release of the neuropeptide P from the sensory nerve fibers of the C type. In mammals, capsaicin (a member of the vanilloid family .binds to a receptor called the vanilloid receptor subtype 1 (TRPV1). TRPV1 is an ion channel-type receptor. TRPV1, which can also be stimulated with heat and physical abrasion, permits cations to pass through the cell membrane and into the cell when activated. The resulting depolarisation of the neuron stimulates it to signal the brain. By binding to the TRVP1 receptor, the capsaicin molecule produces the same sensation that excessive heat or abrasive damage would cause, explaining why the spiciness of capsaicin is described as a burning sensation.Research has shown that the capsaicinoids are all physiologically (virtually) identical, with very few differences other than binding efficacy to TRPV1. Upon binding to TRPV1 receptor capsaicin releases sensory neuropeptides that trigger a neurogenic inflammatory response The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. 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. The material may produce respiratory tract irritation. Symptoms of pulmonary irritation may include coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and a burning sensation. Unlike most organs, the lung can respond to a chemical insult or a chemical agent, by first removing or neutralising the irritant and then repairing the damage (inflammation of the lungs may be a consequence). The repair process (which initially developed to protect mammalian lungs from foreign matter and antigens) may, however, cause further damage to the lungs (fibrosis for example) when activated by hazardous chemicals. Often, this results in an impairment of gas exchange, the primary function of the lungs. Therefore prolonged exposure to respiratory irritants may cause sustained breathing difficulties. The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration. Convulsions, excitement, respiratory tract changes recorded.
BARIUM CHROMATE	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested. **WARNING:** This substance has been classified by the IARC as Group 1: **CARCINOGENIC TO HUMANS**.
CAPSICUM ANNUM OLEORESIN & POTASSIUM PERCHLORATE & LEAD THIOCYANATE	No significant acute toxicological data identified in literature search.

Acute Toxicity	✔	**Carcinogenicity**	✘
Skin Irritation/Corrosion	✘	**Reproductivity**	✘
Serious Eye Damage/Irritation	✔	**STOT - Single Exposure**	✘
Respiratory or Skin sensitisation	✘	**STOT - Repeated Exposure**	✘
Mutagenicity	✘	**Aspiration Hazard**	✘

Legend: ✘ *– Data either not available or does not fill the criteria for classification*
✔ *– Data available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
Combined Systems MODEL 6340-OCV Aerosol Grenade	Not Available	Not Available	Not Available	Not Available	Not Available

Continued...

1,1,1,2-tetrafluoroethane	**ENDPOINT**	**TEST DURATION (HR)**	**SPECIES**	**VALUE**	**SOURCE**
	LC50	96	Fish	29.671mg/L	3
	EC50	48	Crustacea	980mg/L	5
	EC50	96	Algae or other aquatic plants	97.260mg/L	3
	NOEC	72	Algae or other aquatic plants	ca.13.2mg/L	2
Capsicum annum oleoresin	**ENDPOINT**	**TEST DURATION (HR)**	**SPECIES**	**VALUE**	**SOURCE**
	Not Available	Not Available	Not Available	Not Available	Not Available
potassium perchlorate	**ENDPOINT**	**TEST DURATION (HR)**	**SPECIES**	**VALUE**	**SOURCE**
	EC50	48	Crustacea	>100mg/L	2
	EC50	72	Algae or other aquatic plants	>100mg/L	2
	EC10	72	Algae or other aquatic plants	>100mg/L	2
	NOEC	2016	Fish	11.48mg/L	2
barium chromate	**ENDPOINT**	**TEST DURATION (HR)**	**SPECIES**	**VALUE**	**SOURCE**
	LC50	96	Fish	>=3.3mg/L	2
	EC50	96	Algae or other aquatic plants	0.32mg/L	2
	NOEC	72	Algae or other aquatic plants	>=1.15mg/L	2
lead thiocyanate	**ENDPOINT**	**TEST DURATION (HR)**	**SPECIES**	**VALUE**	**SOURCE**
	NOEC	2976	Fish	1.1mg/L	5

Legend:	*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
1,1,1,2-tetrafluoroethane	HIGH	HIGH

Bioaccumulative potential

Ingredient	Bioaccumulation
1,1,1,2-tetrafluoroethane	LOW (LogKOW = 1.68)

Mobility in soil

Ingredient	Mobility
1,1,1,2-tetrafluoroethane	LOW (KOC = 96.63)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	▸ Recycle wherever possible or consult manufacturer for recycling options. ▸ Consult State Land Waste Management Authority for disposal. ▸ Bury residue in an authorised landfill. ▸ Recycle containers if possible, or dispose of in an authorised landfill.

SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant	NO
HAZCHEM	2X

Land transport (ADG)

UN number	1700
UN proper shipping name	TEAR GAS CANDLES

Continued...

Transport hazard class(es)	Class: 6.1 Subrisk: 4.1
Packing group	Not Applicable
Environmental hazard	Not Applicable
Special precautions for user	Special provisions: Not Applicable Limited quantity: Not Applicable

Air transport (ICAO-IATA / DGR)

UN number	1700
UN proper shipping name	Tear gas candles
Transport hazard class(es)	ICAO/IATA Class: 6.1 ICAO / IATA Subrisk: 4.1 ERG Code: 6Fi
Packing group	Not Applicable
Environmental hazard	Not Applicable
Special precautions for user	Special provisions: A1 Cargo Only Packing Instructions: 679 Cargo Only Maximum Qty / Pack: 50 kg Passenger and Cargo Packing Instructions: Forbidden Passenger and Cargo Maximum Qty / Pack: Forbidden Passenger and Cargo Limited Quantity Packing Instructions: Forbidden Passenger and Cargo Limited Maximum Qty / Pack: Forbidden

Sea transport (IMDG-Code / GGVSee)

UN number	1700
UN proper shipping name	TEAR GAS CANDLES
Transport hazard class(es)	IMDG Class: 6.1 IMDG Subrisk: 4.1
Packing group	Not Applicable
Environmental hazard	Not Applicable
Special precautions for user	EMS Number: F-A , S-G Special provisions: Not Applicable Limited Quantities: 0

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

1,1,1,2-TETRAFLUOROETHANE(811-97-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List
Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes
Australia Dangerous Goods Code (ADG Code) - Packing Instruction - Liquefied and Dissolved Gases
Australia Exposure Standards
Australia Inventory of Chemical Substances (AICS)
International Air Transport Association (IATA) Dangerous Goods Regulations
International Maritime Dangerous Goods Requirements (IMDG Code)
United Nations Recommendations on the Transport of Dangerous Goods Model Regulations

CAPSICUM ANNUM OLEORESIN(68917-78-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

POTASSIUM PERCHLORATE(7778-74-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List
Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Inventory of Chemical Substances (AICS)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Index
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4
International Air Transport Association (IATA) Dangerous Goods Regulations
International Maritime Dangerous Goods Requirements (IMDG Code)
United Nations Recommendations on the Transport of Dangerous Goods Model Regulations

BARIUM CHROMATE(10294-40-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Continued...

Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List
Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes
Australia Explosives Code (AE Code)
Australia Exposure Standards
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Inventory of Chemical Substances (AICS)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Index
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Part 2, Section Seven - Appendix I
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Air Transport Association (IATA) Dangerous Goods Regulations
International Maritime Dangerous Goods Requirements (IMDG Code)
United Nations Recommendations on the Transport of Dangerous Goods Model Regulations

LEAD THIOCYANATE(592-87-0) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List
Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes
Australia Exposure Standards
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Inventory of Chemical Substances (AICS)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Index
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 10 / Appendix C
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Air Transport Association (IATA) Dangerous Goods Regulations
International Maritime Dangerous Goods Requirements (IMDG Code)
United Nations Recommendations on the Transport of Dangerous Goods Model Regulations

National Inventory Status

National Inventory	Status
Australia - AICS	Yes
Canada - DSL	No (lead thiocyanate)
Canada - NDSL	No (Capsicum annum oleoresin; barium chromate; 1,1,1,2-tetrafluoroethane; potassium perchlorate)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	No (Capsicum annum oleoresin)
Japan - ENCS	No (Capsicum annum oleoresin)
Korea - KECI	Yes
New Zealand - NZIoC	No (lead thiocyanate)
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	No (Capsicum annum oleoresin)
Vietnam - NCI	Yes
Russia - ARIPS	No (Capsicum annum oleoresin; lead thiocyanate)
Thailand - TECI	No (barium chromate; lead thiocyanate)
Legend:	*Yes = All CAS declared ingredients are on the inventory* *No = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)*

SECTION 16 OTHER INFORMATION

Revision Date	23/12/2016
Initial Date	Not Available

SDS Version Summary

Version	Issue Date	Sections Updated
2.1.1.1	22/12/2016	Acute Health (eye), Acute Health (inhaled), Acute Health (skin), Acute Health (swallowed), Advice to Doctor, Chronic Health, Classification, Disposal, Engineering Control, Handling Procedure, Physical Properties, Storage (suitable container), Use
3.1.1.1	23/12/2016	Acute Health (eye), Classification, Fire Fighter (extinguishing media), Fire Fighter (fire/explosion hazard), Fire Fighter (fire fighting), Personal Protection (other), Personal Protection (Respirator), Spills (major), Spills (minor)

Other information

Ingredients with multiple cas numbers

Name	CAS No
Capsicum annum oleoresin	68917-78-2, 8023-77-6

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.

The 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.

Definitions and abbreviations

Continued...

PC－TWA: Permissible Concentration-Time Weighted Average
PC－STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index