

G.K. Chemical Specialties Co. Inc. 90 Barbados Blvd. Scarborough, Ontario M1J 1K9 Tel: (416) 261-7182 Fax: (416) 261-5663

SAFETY DATA SHEET (SDS)

PRODUCT NAME: G-760 GREASE TRAP CLEANER		
HEALTH HAZARD RATING:	(2)- MODERATE HAZARD	
FLAMMABILITY HAZARD RATING:	(2)- MODERATE HAZARD	
REACTIVITY HAZARD RATING:	(0)- MINIMAL HAZARD	
PERSONAL PROTECTION:	H - (Splash goggles, Gloves, Synthetic apron, Vapor respirator)	
HAZARD ALERT SIGN:	GHS02 GHS08 GHS07	

SECTION 1 – IDENTIFICATION		
PRODUCT IDENTIFIER		
PRODUCT NAME	G-760 GREASE TRAP CLEANER	
MANUFACTURER'S NAME AND ADDRESS EMERGENCY PHONE NO.	G.K. Chemical Specialties Co. Inc. 90 Barbados Blvd. Scarborough, Ontario M1J 1K9 (416) 261-7182 / 905 427-7605/ 416-526-4037 CHEMTREC(24 HR EMERGENCY) 1-800-424-9300 International CHEMTREC: 1-703-527-3887	
SUPPLIER'S NAME AND ADDRESS EMERGENCY PHONE NO.		
CHEMICAL NAME	NOT APPLICABLE	
CHEMICAL FAMILY	NOT APPLICABLE	
TRADE NAME AND SYNONYMS	NOT APPLICABLE	
MATERIAL USE	INDUSTRIAL, COMMERCIAL AND INSTITUTIONAL	

G.K. Chemical Specialties Co. Inc. has compiled the information and recommendations contained in this Safety Data Sheet from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the SDS was prepared. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation.

G.K. Chemical Specialties Co. Inc. extends no warranty and assumes no responsibility as to the accuracy of the content or sufficiency of the information and expressly disclaims all liability for reliance thereon. This SDS provides guidelines for the safe handling of this product. It does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required. Individuals exposed to this product should read and understand this information and be provided pertinent training prior to working with this product.

G.K. Chemical Specialties Co. Inc. assumes no responsibility for personal injury or property damage to vendors, users or third parties caused by the material. Such vendors or users assume all risks associated with the use of the material.

<u>INGREDIENTS.</u> This SDS, under section of Ingredients, contains all ingredients listed under INGREDIENT DISCLOSURE LIST P.C. 1987-2719, 20/1/88 CANADA GAZETTE PART II VOL. 122, No 2 of HAZARDOUS PRODUCT ACT.

Percentage range of concentration of ingredients is expressed as percentage by weight of the total weight of the product. Ingredient List does not necessarily list all ingredients in the formulation and does not necessarily list all ingredients under the Disclosure List.

<u>T.L.V.</u> (units) or Threshold Limit Values refer to the limiting concentrations recommended by the Ministry of Labour. These values were adopted by the American Conference of Governmental Industrial Hygienists (A.C.G.I.H.). The figures refer to time-weighted average concentrations as P.P.M. (V/V) or mg/m³ for a normal working day or at any time for some materials.

<u>"C.A.S REG. No."</u> means the identification number assigned to a chemical substance by the Chemical Abstracts Service Division of the American Chemical Society.

<u>"LC 50"</u> means the concentration of a substance in air that when administered by means of inhalation over a specified length of time in an animal assay, is expected to cause the death of 50 per cent of a defined animal population.

<u>"LD 50"</u> means the single dose of a substance that, when administered by a defined route in an animal assay, is expected to cause death of 50 per cent of a defined animal population.

<u>FLASH POINT.</u> The minimum temperature at which a substance gives off flammable vapors which in contact with spark or flame will ignite.

NIOSH- National institute for occupational safety and health

STEL- Short term exposure limit

TWA- Time-weighted average

PEL- Permissible exposure limit

ACGIH- American conference of governmental industrial hygienist

OSHA- Occupational safety and health act

SECTION 2 – HAZARD IDENTIFICATION

Dangerous Goods- WHMIS: CLASS B, Div. 3, CLASS D, DIV 2B **OSHA HAZARDS**: Combustible liquid, Target Organ Effect, Irritant.

Target Organs: Nerves, Kidney, Cardiovascular system, Gastrointestinal tract, Liver. Signal Words: **Danger.**

GHS CLASSIFICATION

Flammable liquids- Category 3 Acute toxicity – Inhalation (vapors)- Category 4 Acute toxicity-Oral – Category 4 Skin corrosion / irritation- Category 2 Serious eye damage/ eye irritation - Category 2b Specific target organ toxicity- single exposure (Central nervous system) - Category 3 Aspiration hazard – Category 1



GHS Label Elements, including precautionary statements: Hazard Statements: HAZARD STATEMENTS

HAZARD STATEIVIENTS

- H226- Flammable liquid and vapor
- H304- May be fatal if swallowed and enters airways
- H316- Causes skin irritation
- H319- Causes serious eye irritation
- H335- May cause respiratory irritation
- H336- May cause drowsiness or dizziness
- H302-Harmful if swallowed
- H373- May cause damage to organs through prolonged or repeated exposure



PREVENTION (see also section 4 –First aid and measures)

- P210- Keep away from heat/sparks/open flames/hot surfaces
- P261- Avoid breathing dust/fumes/gas/mist/vapors/spray
- P280- Wear protective gloves / protective clothing / eye protection / face protection
- P271- Use only outdoors or in a well-ventilated area
- P264- Wash skin thoroughly after handling
- P242- Use only non-sparking tools.
- P243- Take precautionary measures against static discharge
- P405- Store locked up
- P233- Keep container tightly closed.

P202- Do not handle until all safety precautions have been read and understood.

RESPONSE

P305+P351+P338- IF IN EYES: Rinse cautiously with water for several minutes: Remove contact lenses if present and easy to do so. Continue rinsing.

P337 + P313: If eye irritation persists: Get medical advice/attention

P301 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

P301 + P310; IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician P303 + P361 + P353: IF ON SKIN (or hair): Remove/ take off immediately all contaminated

clothing. Rinse skin with water/shower

P370 + 378: In case of fire, use dry chemical to extinguish

POTENTIAL HEALTH EFFECTS

EYES: Causes serious eye irritation





INHALATION: May be harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness and dizziness. Can cause irritation of mucous membranes and central nervous system depression. Aspiration into lungs may cause pneumonia or death
 SKIN: May be harmful if absorbed through skin. Causes skin irritation
 INGESTION: May be harmful if swallowed

HAZARDOUS INGREDIENTS	APPROXIMATE CONCENTRATIO N%	C.A.S., N.A. OR U.N. NUMBERS	LD50 {SPECIFY SPECIES & ROUTE}	LC 50 {SPECIFY SPECIES & ROUTE}
Odourless Mineral Spirits	60 - 70	64742-48-9	Oral(Rat): >5,000 mg/kg Dermal(Rabbit): >2,000mg/kg	Inhalation: Rat- >7630 mg/m ³
(R)-p-Mentha-1,8-diene	20 - 25	5989-27-5	Oral (Rat): 4,400 mg/kg Dermal (Rabbit): >5,000mg/kg	
2-Butoxyethanol	7 – 15	111-76-2	Oral (Rat): 1,300 mg/kg Dermal(Rabbit): >5,000mg/kg	ACGIH TLV-TWA 20 ppm (96.7mg/m ³)
Diethylene glycol monoethyl ether	3 – 7	111-90-0	Oral (Mouse): 6,031 mg/kg Dermal (Rabbit): 9,143 mg/kg	ACGIH TLV-TWA 25 ppm
Alcohols, C9-C11, Ethoxylated	3 – 7	68439-46-3	Oral (Rat): 1,400 mg/kg Dermal (Rabbit): >5000mg/kg	
Alkyl Dimethyl benzyl ammonium chloride C12-C16	1 - 3	68424-85-1	Oral (Rat): 344 mg/kg Dermal (Rabbit): >2000mg/kg	Inhalation, rabbit: 0.054- 0.51 mg/kg

SECTION 4 -	SECTION 4 – FIRST AID MEASURES		
SKIN CONTACT	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and wash using soap. Get medical attention if necessary.		
EYE CONTACT	Immediately hold eyelids open and flush with water for at least 15 minutes. Seek medical attention.		
INHALATION	For excessive inhalation remove casualty to fresh air and keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention if necessary		
INGESTION	May be harmful if swallowed. Do not induce vomiting. Seek immediate medical attention. Never give anything by mouth to an unconscious or convulsing person. If vomiting occur spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Danger of aspiration of vomit into the lungs can cause serious damage and chemical pneumonitis. Take a copy of the label and / or SDS with the victim to the health professional.		
NOTES TO PHYSICIAN	 Treatment based on sound judgment of physician and individual reaction of patient. Eye contact: Causes serious eye irritation. Symptoms may include stinging and tearing Inhalation: Harmful if inhaled in excessive amounts. Can cause central nervous system depression. May cause drowsiness, dizziness, headache, nausea, breathing difficulties and other symptoms of central nervous system depression. Skin contact: May cause skin irritation. (Redness, Swelling, Itching and Dryness) 		

Ingestion: Can cause central nervous system depression. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach. Can cause nausea, vomiting and diarrhea. **ASPIRATION HAZARD:** Aspiration into the lungs during swallowing or subsequent vomiting may cause chemical pneumonitis, which can be fatal.

SECTION 5 – FIRE-FIGHTING MEASURES		
FLASH POINT (°C)	48°C (118.4°F)	
FLASH POINT METHOD	Closed Cup or Tag	
AUTOIGNITION TEMPERATURE (⁰ C)	255°C (491°F)	
UPPER FLAMMABLE LIMIT (% VOL.)	6.1 %	
LOWER FLAMMABLE LIMIT (% VOL.)	0.7 %	
HAZARDOUS COMBUSTION PRODUCTS	Carbon Dioxide (CO ₂), Carbon monoxide (CO). Oxides of Nitrogen, Oxides of citrus terpenes.	
UNUSUAL FIRE/ EXPLOSION HAZARDS	Flammable liquid and vapors (Category 3). Explosive in presence of open flames, sparks, or heat. Containers can rupture and explode under fire conditions due to pressure and vapor buildup. Heated vapors may form explosive mixture with air. Vapors may travel across the ground and reach an ignition source.	
SENSITIVITY TO MECHANICAL IMPACT	yes	
SENSITIVITY TO STATIC DISCHARGE	yes	
EXTINGUISHING MEDIA	Water fog, Alcohol-resistant foam, dry powder or Carbon Dioxide. Use media appropriate for surrounding fire. Do not use a solid water stream as it may scatter and spread fire.	
SPECIAL FIRE FIGHTING PROCEDURES	Fire fighters should wear full protective clothing, including self-contained breathing equipment. Vapor may travel considerable distance to source of ignition and flash back. Cool exposed containers with water spray.	

SECTION 6 – ACCIDENTAL RELEASE MEASURES		
LEAK AND SPILL PROCEDURE	Stop leak and ventilate the area. Avoid breathing mist or vapours. Eliminate source of ignition. Use only non-sparking tools and equipment in the clean-up process. Move containers from spill area if safe to do so. Absorb spill with vermiculite or other noncombustible absorbent material. Place in a suitable container (with lid tightly covered) for disposal. Solvent soaked materials may spontaneously combust.	
	For large spills, dike spill, recover free liquid, collect with an electrically protected vacuum cleaner or by wet-brushing. Use absorbent material to dry area. Put all material into appropriate waste containers. Rinse with water. Avoid contaminating ground water.	
ENVIRONMENTAL PRECAUTIONARY	Prevent entry into sewers or streams. Any release to the environment may be subject to federal or local reporting requirements.	
PERSONAL PRECAUTIONARY MEASURES	Wear protective clothing during cleanup. See section 8 for recommendations on the use of personal protective equipment. Avoid breathing vapors, mist or gas. Restrict access to area until completion of clean-up.	

SECTION 7 – HANDLING AND STORAGE

HANDLING PROCETURES	 Avoid contact with eyes. Avoid ingestion. Do not breathe vapors. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Wear personal protective equipment appropriate to task. Use good industrial hygiene practices in handling this product. Keep container closed when not in use. Take measure to prevent the buildup of electrostatic charge. Use only non-sparking tools. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Eating, drinking and smoking should be prohibited in areas where this product is handled, stored and processed. Workers should wash hands and face before eating. Launder contaminated clothing prior to reuse. Do not cut, grind, weld or drill on or near containers. CAUTION: Cloth or paper soaked in this product may undergo spontaneous ignition. Never discard wiping cloths soaked in this product carelessly. Do not put wet cloth or paper in a garbage bag or garbage container. Dry carefully before discarding.
STORAGE NEEDS	Keep container tightly closed. Store in a cool area. Keep in the original container or an approved alternative. Store and use away from heat, sparks, open flame or any other ignition source. Store containers carefully and prevent leakage. Store separate from oxidizing materials.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION		
VENTILATION REQUIREMENTS	For outdoors use no critical hazards. For indoor use good ventilation is recommended. Use only with adequate ventilation to prevent build-up of vapors. Open all windows and doors. Use only with a cross ventilation of moving fresh air across the work area. If strong odor is noticed or you experience slight dizziness, headache, nausea, or eye- watering- STOP- ventilation is inadequate. Leave area immediately. When the following figures listed are exceeded provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective. Occupational exposure limits For Odourless Mineral Spirits (64742-48-9): NIOSH TWA: 500 ppm (2,000 mg / m ³). For (R) –p-Menth-1,8 diene (5989-27-5): ACGIH TWA: 30 ppm (165.5 mg/m ³ . For 2-Butoxyethanol (111-76-2): ACGIH TLV-TWA: 20 ppm (96.7 mg / m ³). OSHA- TWA: 50 ppm (240 mg/m ³). NIOSH IDLE (Immediate danger): 700 ppm (3384 mg/m ³)	
PROTECTIVE EQUIPMENT	Ensure that eyewash stations are proximal to the work-station location. The selection of personal protective equipment will vary depending on the condition of use.	
ЕҮЕ/ТҮРЕ	Splash goggles, safety glasses or face shields are recommended to safeguard against potential eye contact, irritation, or injury.	
RESPIRATORY/TYPE	Approved/ certified vapor respirator. Any chemical cartridge respirator with organic vapor cartridges is recommended.	
GLOVE/TYPE	Nitrile, Butyl impervious gloves	
FOOTWEAR/TYPE	Boots	
BODY/TYPE	Protective clothing is required. Use impervious clothing (apron, coveralls). The selection of personal protective equipment will vary depending on the conditions of use.	

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES		
APPEARANCE – PHYSICAL STATE	Clear liquid	
ODOUR	Mild citrus	
ODOUR THRESHOLD (PPM)	Not available	
РН	Not applicable	
MELTING POINT (°C)	See freezing point	
BOILING POINT (°C)	177 ⁰ C (350.6 ⁰ F) INITIAL	
FREEZING POINT (^o C)	>-60°C (>76° F)	
EVAPORATION RATE	<1 (n-Butyl Acetate=1)	
FLAMMABILITY	Flammable	
FLASH POINT (⁰ C)	48°C (118.4°F)	
AUTO IGNITION TEMPERATURE	255°C (491°F) for (R)-p- Menth-1,8 diene	
DECOMPOSITION TEMPERATURE	Not available	
VAPOUR DENSITY	(air= 1) >5.4	
VAPOUR PRESSURE	@ 20 ⁰ C) 0.8 mmHg	
SOLUBILITY	Soluble in water	
VISCOSITY	Thin liquid	
% VOLATILE BY VOLUME	95.0 ±1%	
SPECIFIC GRAVITY	$0.82 \pm 0.02 \text{ gm} / \text{cm}^3$	

SECTION 10 – STABILITY AND REACTIVITY		
REACTIVITY	Not self-reactive, self-heating	
CHEMICAL STABILITY	Stable	
POSSIBILITY OF HAZARDOUS	Under normal conditions of storage and use, hazardous reaction will not	
REACTIONS	occur.	
CONDITIONS TO AVOID	Keep away from heat, flame and sparks. Avoid incompatible materials. Do not allow vapors to accumulate in low or confined areas.	
INCOMPATIBLE MATERIALS	Strong oxidizing agents.	
HAZARDOUS DECOMPOSITION PRODUCTS	Carbon Dioxide (CO ₂), Carbon monoxide (CO), Oxides of Nitrogen, Oxides	
PRODUCIS	of citrus terpenes.	

SECTION 11-TOXICOLOGICAL INFORMATION		
For Odourless Mineral Spirits (64742-48-9): Acute Oral Toxicity LD50 (Rat): >5,000 mg/kg. Acute Dermal Toxicity LD50 (Rabbit): >2,000 mg/kg. For (R)-p-Mentha-1,8-diene (5989-27-5): Acute Oral Toxicity LD50 (Rat): 4,400 mg/kg. Acute Dermal Toxicity LD50 (Rabbit): >5,000 mg/kgTOXICITY EFFECTS ON ANIMALSFor 2-Butoxyethanol: Acute Oral Toxicity LD50 (Rat): 1,300 mg/kg. Acute Dermal Toxicity LD50 (Rabbit): >5,000 mg/kg. For Diethylene glycol monoethyl ether (111-90-0): Acute Oral Toxicity LD50 (Mouse): 6,031 mg/kg. Acute Dermal Toxicity LD50 (Rabbit): 9,143 mg/kg. For Alcohols, C9-C11, Ethoxylated (68439-46-3): Acute Oral Toxicity LD50 (Rat): 1,400 mg/kg. Acute Dermal Toxicity LD50 (Rabbit): >5,000 mg/kg. For Alkyl Dimethyl benzyl ammonium chloride C12-C16 (68424-85-1): Acute Oral Toxicity LD50 (Rat): 344 mg/kg. Acute Dermal Toxicity LD50 (Rabbit): >2,000 mg/kg.		

TOXIC EFFECTS ON HUMANS	Hazardous in case of ingestion or inhalation. Hazardous in case of skin contact. Skin contact can cause redness, irritation and drying. Severity depends on the amount and duration of exposure. Eyes: Vapors may be irritating to the eyes. Liquid contact will cause stinging redness, swelling and tearing. Inhalation: Excessive inhalation of high concentrations may be harmful. Mist or vapor can irritate the throat and lungs. Breathing excessive amount of this product may cause central nervous system depression, in toxication, may cause drowsiness, headaches, dizziness. Ingestion: If swallowed this material may irritate the mucous membranes of the mouth throat and esophagus. May cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of this material into the lungs may result in damage or death.
CHRONIC EFFECTS ON HUMANS	Reports have associated repeated and prolonged overexposure to solvents with neurological and other physiological damage. May cause anemia, bone marrow, liver damage. Repeated or prolonged skin contact may cause redness, irritation, and scaling of the skin.
CARCINOGENICITY	No evidence
TERATOGENICITY	No evidence
MUTAGENICITY	No evidence
REPRODUCTIVE EFFECTS	Reproductive Toxicity-Category 2. Suspected of damaging the unborn child.

SECTION 12 -ECOLOGICAL	SECTION 12 -ECOLOGICAL INFORMATION		
	Product expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment. MOBILITY: Mostly volatile material and will partition rapidly to air. Not expected to partition to sediment and wastewater solids.		
ΕΟΤΟΧΙΟΙΤΥ ΔΑΤΑ	For Odourless Mineral Spirits (64742-48-9: Acute Toxicity to fish LC50, Fathead minnow (Pimephales promelas): >8.2 mg / L/96 h. LC50, Rainbow trout (Oncorhynchus mykiss): 10 mg /L / 96h. Acute Toxicity to aquatic invertebrates EC50, Daphnia magna (Water flea): 4.5 mg/L/ 48 h. Acute Toxicity to Algae/aquatic plants EC50, Green algae (Selenastrum capricornutum): 3.1 mg / L / 96 h. Not inherently Biodegradable.		
	For (R)-p-Menth-1,8 diene (5989-27-5): Acute aquatic Toxicity to fish, LC50, Fathead minnow (Pimephales promelas): 0.7 mg / L /96h. Acute toxicity to aquatic invertebrates, EC50, Daphnia magna (water flea): 0.36 mg /L /48h. Ingredient BIODEGRADABLE		
	For 2- Butoxyethanol (111-76-2): Material is practically non-toxic to Aquatic organisms on an acute basis (LC50/EC50 >100 mg / L in most sensitive species tested). Acute Toxicity to aquatic invertebrates, EC50, Daphnia magna (Water flea): 1,550 mg / L /48h. Ingredient readily BIODEGRADABLE.		
	For Diethylene glycol monoethyl ether (111-90-0): Material is practically non- toxic to Aquatic organisms. Acute Toxicity to fish, LC50, Catfish (Ictalurus catus), flow-through test: 6,010 mg/L /96h. Acute Toxicity to aquatic invertebrates, EC50, Daphnia magna (Water flea): 1,982 mg /L /48 h. Ingredient BIODEGRADABLE		

	For Alcohols, C9-C11, Ethoxylated (68439-46-3): Acute Toxicity to fish, LC50, Fathead minnow (Pimephales promelas): 8.5 mg / L /96 h. Acute Toxicity to aquatic invertebrates, EC50, Daphnia magna (water flea):5.3 mg /L /48 h. Ingredient BIODEGRADABLE.
	For Alkyl dimethyl benzyl ammonium chloride C12-C16 (68424-85-1): Toxic to aquatic life. Acute Toxicity to fish, LC50: 0.86 ppm / 96 hours. Acute Crustacea, LC50, Daphnia magna (Water flea): 0.0058-0.016 mg / L 48 h. Ingredient BIODEGRADABLE.
BIODEGRADABILITY	Not readily biodegradable
PRODUCTS OF DEGRADATION	No information found

SECTION 13 – DISPOSAL CONSIDERATIONS		
WASTE DISPOSAL	Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations	
INFORMATION ON SAFE HANDLING FOR DISPOSAL INCLUDING ANY CONTAMINATED PACKAGING	Suitable waste facility	

SECTION 14 – TRANSPORT INFORMATION		
UN NUMBER	1993	
UN PROPER SHIPPING NAME	FLAMMABLE LIQUID, N.O.S. (Flash Point: 48°C (118.4°F), >60 % Odourless Mineral Spirits).	
TRANSPORT HAZARD CLASS	CLASS 3: Flammable liquid	
PACKAGING GROUP	Pk: III	
ENVIRONMENTAL HAZARDS	Marine pollutant	
TRANSPORT IN BULK, if applicable	NOT AVAILABLE	
SPECIAL PRECAUTIONS	Guide to Canadian transportation. Emergency Response Guidebook (ERG: # 128	

SECTION 15 – REGULATORY INFORMATION		
SAFETY HEALTH & ENVIRONMENTAL REGULATIONS SPECIFIC TO THE PRODUCT	U.S. TSCA inventory Status: All components of this product are either on the Toxic Substances Control Act (TSCA) INVENTORY List or exempt. Canadian DSL Inventory Status: All components of this product are either on the Domestic Substances List (DSL) or the Non-Domestic Substances List (NDSL) or exempt.	

SECTION 16 – OTHER INFORMATION		
PREPARED BY:	Gus Kaklamanos - Chemist	
TELEPHONE NO.:	416-261-7182	
DATE OF THE LATEST REVISION OF SDS:	October 5, 2017	

NOTE: A lot of the information provided in this SDS may refer to very large or special usage of the product. The basic purpose of this product is to be used as a grease trap cleaner, where quantities stored and used at any time by various users are very small and no critical hazard is expected.