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SAFETY DATA SHEET

SDS ID NO.: AC-1
REVISION DATE: 1-1-2018

SECTION 1: IDENTIFICATION	
Product Name:	Petroleum Asphalt
Synonym:	Asphalt Cement (ACs)
Chemical Family:	Asphalt
Manufacturer:	
Contact Information:	Mike Anderson – manderson@asphaltinstitute.org
Emergency Telephone Number:	859-288-4960
Address:	2696 Research Park Drive, Lexington, KY 40511
Use:	Road building and other services

SECTION 2: HAZARD IDENTIFICATION	
Classification	
OSHA Regulatory Status	This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1A
Carcinogenicity	Category 2
Acute aquatic toxicity	Category 3
Hazards Not Otherwise Classified (HNOC)	Hot liquid may cause thermal burns
Label elements	
EMERGENCY OVERVIEW	
Warning 	Contact with product at elevated temperatures can result in thermal burns May release highly toxic hydrogen sulfide gas that quickly fatigues the sense of smell Causes skin irritation Causes serious eye irritation May cause an allergic skin reaction

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Appearance: Black-brown solid or semi-solid at room temperature. Liquid at temperatures >70°C.	Physical State: Liquid	Odor: Tar
Precautionary Statements – Prevention	Obtain special instructions before use Do not handle until all safety precautions have been read and understood Wear protective gloves/protective clothing/eye protection/face protection Avoid breathing fume/gas/vapors Wash hands and any possibly exposed skin thoroughly after handling Contaminated work clothing should not be allowed out of the workplace Avoid release to the environment	
Precautionary Statements – Response	IF exposed or concerned: Get medical attention IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical attention IF ON SKIN: Wash with plenty of soap and water If skin irritation or rash occurs: Get medical attention Take off contaminated clothing and wash before reuse	
Precautionary Statements – Storage	Store locked up	
Precautionary Statements – Disposal	Dispose of contents/container at an approved waste disposal plant	

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Petroleum Asphalt is a solid carbon material produced from high temperature vacuum distillation of crude oil. Composition varies depending on source of crude and specifications of final product. Can contain minor amounts of sulfur, nitrogen and oxygen compounds as well as trace amounts of heavy metals such as nickel, vanadium and lead. Composition varies depending on source of crude. Polycyclic aromatic hydrocarbons (3-7 ring) have been found to be present in trace concentrations (<0.01%).

Composition Information:

Name	CAS Number	% Concentration
Asphalt	8052-42-4	90-100
Sulfur Compounds	Mixture	1-5

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SECTION 4: FIRST AID MEASURES	
<u>First Aid Measures</u>	
General Advice:	Immediately address any airway, breathing, or circulation concerns. Contact EMS if the person is having trouble breathing, moving, or staying awake. Perform a quick assessment for other injuries that may be present including falls or from falling objects. REMEMBER ABCC (AIRWAY, BREATHING, CIRCULATION, COOLING).
Inhalation:	If symptoms of overexposure to asphalt fume develop, move to fresh air in a position comfortable for breathing. If symptoms or irritation occur, call a poison control center or doctor.
Skin Contact:	**Hot material**: DO NOT DELAY. Immediately immerse or place the affected skin under a water stream for at least 20 minutes. Urgent medical attention is required for burns to the face, eyes, hands, feet, genitalia, and for circumferential or large burn areas. GET MEDICAL ATTENTION IMMEDIATELY. Do not attempt to remove solidified asphalt if not a physician. Leave burn uncovered. Ice (or "cold packs") may be used in the event that water is unavailable. Only remove clothing if not adhering to the skin. Be aware that although it is very important to cool the burn thoroughly and completely, the overuse of ice may increase the risk of hypothermia. **Cold material**: To remove cold asphalt not associated with a burn, wash with soap and water or waterless cleaner. If symptoms or irritation or rash occur, call a poison control center or doctor.
Eye Contact:	**Hot material**: After contact with hot asphalt, lay the person flat on their back, remove contact lenses if easy to do, and flush with water from a continuous stream for at least 20 minutes by allowing the water to flow over the bridge of the

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	nose to the eyes. GET MEDICAL ATTENTION IMMEDIATELY. Cold material: If irritation develops, flush eyes with water. If irritation or redness persists call a poison control center or a doctor.
Ingestion:	Ingestion not likely. Small amounts of ingested asphalt usually require no treatment. If large amounts are swallowed, call a poison control center or doctor.
Most important signs and symptoms, both short-term and delayed with overexposure	
Adverse Effects:	Frequent or prolonged contact with cold material may cause irritation. Additional effects may include skin sensitization. Exposure to hot melted material can cause thermal burns.
Indication of any immediate medical attention and special treatment needed	
Notes To Physician:	Immediately address any airway, breathing, or circulation concerns.
Skin & Eye Contact:	**Skin** (do not delay) • Immediately place the affected skin under running/flowing water for at least 20 minutes • Prolonged flushing/cooling is necessary **Eyes** (do not delay) • Lay person on their back • Flush with running for at least 20 minutes by allowing the water to flow over the bridge of the nose to the eyes Urgent medical attention is required for burns to the face, eyes, hands, feet, genitalia and for circumferential or large burn areas.
Inhalation:	Inhalation exposure can produce toxic effects. Treat intoxications as hydrogen sulfide exposures. At high concentrations hydrogen sulfide may produce pulmonary edema, respiratory depression, and/or respiratory paralysis. The first priority in treatment should be the establishment of adequate ventilation and the administration of 100% oxygen. Monitor for respiratory distress. If cough or difficulty in

	breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis.

SECTION 5: FIRE-FIGHTING MEASURES	
Suitable extinguishing media	For small fires, Class B fire extinguishing media such as CO2, dry chemical, foam (AFFF/ATC) or water fog can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.
Unsuitable extinguishing media	Do not use straight streams. Water contact can cause violent eruption of hot asphalt.
Specific Hazards arising from the chemical	This product is not a combustible liquid per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.
Hazardous combustion products	Smoke, carbon monoxide, and other products of incomplete combustion.
Explosion Data	Sensitivity to Mechanical Impact No. Sensitivity to Static Discharge No.
Special protective equipment and precautions for firefighters	Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Keep run-off water out of sewers and water sources.
Additional firefighting tactics	Not applicable.

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NFPA	Health	Flammability	Instability	Special Hazard
	2	1	0	

SECTION 6: ACCIDENTAL RELEASE MEASURES	
Personal precautions:	Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Product may be stored at elevated temperatures.
Protective equipment:	Use personal protection measures as recommended in Section 8.
Emergency Procedures:	Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.
Environmental Precautions:	Avoid release to the environment. Avoid subsoil penetration.
Methods and materials for containment:	Contain liquid with sand or soil.
Methods and materials for cleaning up:	Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Allow to cool until hardened. Pick up as solid waste. Recover and return free product to proper containers.

SECTION 7: HANDLING AND STORAGE	
Safe Handling Precautions:	Avoid contact with skin, eyes and clothing. Avoid breathing fumes, gas, or vapors. Use only with adequate ventilation. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment. Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements. Harmful concentrations of hydrogen sulfide (H2S) gas can accumulate in excavations and low-lying areas as well as the vapor space of storage and bulk transport compartments. Stay upwind and vent open hatches before unloading. Sulfur containing products may cause polysulfide deposits (iron sulfide) to form inside iron storage tanks. These pyrophoric deposits, upon exposure

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	to air, can ignite spontaneously. Keep heating coils and flues in storage tanks, trucks and kettles covered with product (8"). Do not overheat.
Storage Conditions:	Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area.
Incompatible Materials:	Strong oxidizing agents.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION				
Name	ACGIH/TLV	OSHA PELS	OSHA – Vacated Pels	NIOSH IDLH
Asphalt 8052-42-4	0.5 mg/m3 TWA	-	-	-

Notes:	The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.
Engineering measures:	Local or general exhaust required in an enclosed area or when there is inadequate ventilation.
Personal Protective Equipment	
Eye protection:	Wear goggles and faceshield when handling hot material.
Skin and body protection:	Wear insulated gloves when handling hot material. Contact the glove manufacturer for specific advice on glove selection and breakthrough times. Wear the appropriate thermal resistant clothing and footwear when handling and applying hot asphalt. Rubberized suits or coats may be needed for some maintenance operations with hot material.

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Respiratory protection:	Where there is potential for airborne exposure to hydrogen sulfide (H2S) above exposure limits, a NIOSH approved, self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode should be used. When H2S vapors exceed permissible limits, i.e., in confined spaces or bulk transport loading/unloading, a positive-pressure atmosphere supplying respirator is recommended. Self-contained breathing apparatus should be used for fire fighting. Provided hydrogen sulfide (H2S) is not detected: if there is potential to exceed the exposure limits for asphalt fumes a NIOSH certified air purifying respirator equipped with organic vapor cartridges/canisters with R or P95 filters should be used. A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed when conditions warrant the use of a respirator. Note: Air purifying respirators are not to be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient atmospheres, (less than 19.5 percent oxygen) or under conditions that are immediately dangerous to life and health (IDLH).
Hygiene measures:	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES	
Information on basic physical and chemical properties	
Physical State:	Liquid
Appearance:	Black-brown solid or semi-solid at room temperature. Liquid at temperatures >70°C.
Color:	Dark brown to black
Odor:	Tar
Odor Threshold:	No data available.

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Property	**Values (Method)**
Melting Point / Freezing Point:	> 15.5 °C / >60 °F (ASTM D36)
Initial Boiling Point / Boiling Range:	176-593 °C / 350-1100 °F (ASTM D2887)
Flash Point	>232 °C / >450 °F (ASTM D92)
Evaporation Rate	No data available.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%)	
Upper Flammability Limit:	No data available.
Lower Flammability Limit:	No data available.
Explosion Limits:	No data available.
Vapor Pressure:	No data available.
Vapor Density	No data available.
Specific Gravity / Relative Density	0.95 – 1.13
Water Solubility	No data available.
Solubility in other solvents	No data available.
Partition Coefficient	No data available.
Decomposition temperature	No data available.
pH:	Not applicable.
Autoignition Temperature	No data available.
Kinematic Viscosity	No data available.
Dynamic Viscosity	>50 P @ 60°C (ASTM D2171)
Explosive Properties	No data available.
VOC Content (%)	No data available.
Density	No data available.
Bulk Density	Not applicable.
Pour Point:	16

SECTION 10: STABILITY	
Reactivity	The product is non-reactive under normal conditions.
Chemical Stability	Stable under recommended storage conditions.
Possibility of Hazardous Reactions	None under normal processing.
Hazardous Polymerization	Will not occur.
Conditions to Avoid	Sources of heat or ignition.
Incompatible Materials	Strong oxidizing agents.
Hazardous Decomposition Products	None known under normal conditions of use.

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SECTION 11: TOXICOLOGICAL INFORMATON			
Potential short-term adverse effects from over exposures			
Inhalation		Fumes or vapors from the heated material may be irritating to the respiratory tract. May release highly toxic hydrogen sulfide gas that quickly fatigues the sense of smell.	
Eye Contact		Vapors may cause eye irritation and sensitivity to light. Contact with hot material may cause thermal burns.	
Skin Contact		May cause skin irritation. May cause an allergic skin reaction. Contact with hot material may cause thermal burns.	
Ingestion		If swallowed at ambient temperature no significant adverse effects are expected. Ingestion of large amounts may cause gastrointestinal blockage. Swallowing hot material may cause burns to the mouth, throat, and stomach.	
Acute Toxicological Data			
Name	Oral LD50	Dermal LD50	Inhalation LC50
Asphalt 8052-42-4	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 94.4 mg/m3 (Rat) 4 h
Delayed and immediate effects as well as chronic effects from short and long-term exposure			
	PETROLEUM ASPHALT: Eye and upper respiratory tract irritation has been reported in some asphalt workers (paving and roofing operations) but they are typically mild and transient. Some studies indicate that asphalt paving workers may experience lower respiratory tract symptoms (e.g., coughing, wheezing, and shortness of breath) and pulmonary function changes. Other studies of asphalt workers found no consistent relationship between exposure to asphalt fumes and pulmonary function. Increased levels of 1-hydroxypyrene (a marker for exposure to polycyclic aromatic hydrocarbons) have been observed in the urine of asphalt workers. Genotoxicity studies (e.g., DNA adducts in the urine) of asphalt workers have been largely inconclusive.		

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	A slight increase in lung cancer mortality was reported in a study of European workers exposed to paving and mastic asphalt, but conclusions were equivocal. A follow-up case-control epidemiology study of asphalt paving workers sponsored by the International Association for Research in Cancer (IARC) concluded that there was no evidence that asphalt exposure was linked to lung cancer. An increase in skin tumors was observed in lifetime studies of laboratory rodents exposed to extracts of asphalt (bitumen). The relevance of these studies to humans is not clear. No increase in skin tumors was observed in a lifetime bioassay where laboratory mice were treated with paving fume condensates. No increase in lung or other tumors were observed in a lifetime inhalation study in laboratory rats exposed to fumes from paving asphalt.
	ASPHALTS USED IN ROOFING OPERATIONS: Some asphalts including roofing flux are further processed (oxidized/air-rectified) by the user or customer before use. An increased incidence of skin tumors was observed in a mouse skin carcinogenicity study where animals were exposed to condensed fumes collected from an oxidized roofing asphalt (BURA Type III) at above 450°F. Additional studies where mice were exposed to oxidized roofing asphalt fume condensates both as a tumor initiator and as a tumor promoter indicate that roofing fume condensate caused tumors as a result of initiation.
	HYDROGEN SULFIDE: Hydrogen sulfide gas has an unpleasant odor that diminishes with increased exposure. Eye irritation may occur at levels above 4 ppm. Olfactory fatigue occurs rapidly at levels of 50 ppm or higher. Odor is not a reliable warning property. Respiratory effects include irritation with possible pulmonary edema at levels above 50 ppm. At 500 ppm immediate loss of consciousness and death can occur. NIOSH has determined that 100 ppm hydrogen sulfide is immediately dangerous to life and health (IDLH).
<u>Adverse effects related to the physical, chemical and toxicological characteristics</u>	
Signs and Symptoms	Frequent or prolonged contact with cold material may cause irritation. Additional effects may include skin sensitization. Rash. Contact with hot material may cause thermal burns.

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Sensitization	May cause sensitization by skin contact. Not expected to be a respiratory sensitizer.
Mutagenic effects	None known.
Carcinogenicity	

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Asphalt 8052-42-4	Not classifiable (A4)	Emissions of straight-run asphalt from paving operations - Possible human carcinogen (2B)	Not Listed	Not Listed

Reproductive toxicity	None known.
Specific Target Organ Toxicity (STOT) –single exposure	Not classified.
Specific Target Organ Toxicity (STOT) –repeated exposure	Not classified.
Aspiration Hazard	Potential for aspiration if swallowed.

SECTION 12: ECOLOGICAL INFORMATION				
Ecotoxicity				
Name	Algae/Aquatic Plants	Fish	Toxicity to Microorganisms	Crustacea
Asphalt 8052-42-4	-	-	-	-

Mobility:	Not likely to move rapidly with surface or groundwater flows because of its low water solubility.
Ecotoxicity:	Practically non-toxic to the aquatic environment.
Bioaccumulation:	May bioaccumulate in aquatic organisms.
Persistence/Biodegradation:	Not readily biodegradable.

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SECTION 13: DISPOSAL CONSIDERATIONS	
Cleanup Considerations:	This material as supplied and by itself, when discarded or disposed of, is not an EPA RCRA hazardous waste according to federal regulations. This material could become a hazardous waste if mixed or contaminated with a hazardous waste or other substance(s). It is the responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

SECTION 14: TRANSPORT INFORMATION	
49 CFR 172.101: DOT:	
Transport Information:	This material when transported via US commerce would be regulated by DOT Regulations.
Proper shipping name:	Elevated Temperature Liquid, N.O.S.
UN/Identification No:	UN 3257
Hazard Class:	9
Packing group:	III
DOT reportable quantity (lbs):	Not applicable.
	Comments: (Hot Petroleum Asphalt) This material must not be transported when heated at or above its flash point.
TDG (Canada):	
Proper shipping name:	Elevated Temperature Liquid, N.O.S.
UN/Identification No:	UN 3257
Hazard Class:	9
Packing group:	III

SECTION 15: REGULATORY INFORMATION	
US Federal Regulatory Information:	
US TSCA Chemical Inventory Section 8(b):	This product and/or its components are listed on the TSCA Chemical Inventory.

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OSHA Hazard Communication Standard	This product has been evaluated and determined to be hazardous as defined in OSHA's Hazard Communication Standard.
EPA Superfund Amendment & Reauthorization Act (SARA):	
SARA Section 302:	This product contains the following component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	**CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs**
Asphalt	NA
Sulfur Compounds	NA
Hydrogen Sulfide	= 500 lb TPQ

SARA Section 304:	This product contains the following component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	**CERCLA/SARA - Hazardous Substances and their Reportable Quantities**
Asphalt	NA
Sulfur Compounds	NA
Hydrogen Sulfide	= 100 lb final RQ = 45.4 kg final RQ

SARA Section 311/312:	The following EPA hazard categories apply to this product: Acute Health Hazard Chronic Health Hazard
SARA Section 313:	This product contains the following components, which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	**CERCLA/SARA 313 Emission reporting**
Asphalt	None
Sulfur Compounds	None
Hydrogen Sulfide	None

State and Community Right-To-Know Regulations: The following component(s) of this material are identified on the regulatory lists below:	
Asphalt	
Louisiana Right-To-Know:	Not Listed

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California Proposition 65:	Not Listed
New Jersey Right-To-Know:	sn 0170
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan critical materials register list:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - Third Degree
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Sulfur Compounds	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed
Pennsylvania Right-To-Know:	Not Listed
Massachusetts Right-To Know:	Not Listed
Florida substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Hydrogen Sulfide	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1017
Pennsylvania Right-To-Know:	Environmental Hazard
Massachusetts Right-To Know:	Extraordinarily Hazardous
Florida substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable

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Michigan critical materials register list:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Extraordinarily Hazardous
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - Fourth Degree
New Jersey - Environmental Hazardous Substances List:	SN 1017 TPQ 500 lb
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	= 100 lb RQ air = 100 lb RQ land/water
Canadian Regulatory Information:	
Canada DSL/NDSL Inventory:	This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Hydrogen Sulfide	A, B1, D1A, D2B	1 %

Note: Not Applicable

SECTION 16: OTHER INFORMATION	
Additional Information:	The pronounced and easily-recognized rotten egg odor of hydrogen sulfide gas (H2S) can be detected at concentrations as low as 0.003-0.13 ppm. Since higher H2S concentrations (100-200 ppm) cause olfactory fatigue and other hydrocarbon odors can "mask" H2S, the sense of smell cannot be used as a reliable indicator of H2S exposure.
Prepared by:	

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