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Health, Safety & Environment

SEAUPG
Hilton Head Island, SC
13NOV12

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Agenda Recent/Potential Future Regulatory Initiatives

- IARC Monograph
- OSHA-HazCom-2012
 - Review of Asphalt Burn Guidelines
- Interest in Asphalt Constituents
 - Naphthalene
 - Hydrogen Sulfide
- Proposals for Some EPA Practices

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IARC Monograph

- What is IARC?
- What Does it Do
- Why is that Important
- What does that have to do with asphalt
- How could that translate into control
- When will we know

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IARC Findings

- Occupational exposures to straight-run bitumens and their emissions during road paving are 'possibly carcinogenic to humans'; -(Group 2B)
- Occupational exposures to oxidized bitumens and their emissions during roofing are 'probably carcinogenic to humans'; -(Group 2A)

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Yet to Come

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- National Toxicology Program [NTP]
- OSHA-Hazard Communication-Current
- Texas Council on Environmental Quality
- California
- ACGIH-TLV®
- OSHA-Hazard Communication-2012

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Merging of Two Moving Fronts

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- IARC Monograph Bitumen and Bitumen Emissions 2011/12
- OSHA Hazard Communication Standard (Regulation) 2012

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GHS

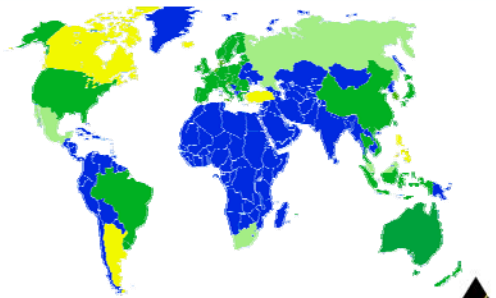
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- What is GHS?
- United Nations' Globally Harmonized System of Classification and Labeling of Chemicals
- Envisioned in Rio '92
- Introduced in '02
- EU adopted in '08
- US adopted in '12

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GHS World Wide

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Expected Benefits

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- Facilitate International Trade
- Enhance Protection of Users
- Consists of:
 - Harmonized Hazard Classification
 - Compatible Labeling System
 - Including Safety Data Sheets
 - Understandable Symbols

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Why is GHS a Big Deal?

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- Change in Philosophy
- Switch From Performance Based Regulation
- To Specification Driven Program
 - Specified Requirements at Each Stage

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Program Elements

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- SDS [formerly MSDS]
- Shipping Container Labels
- Workplace Container Labels
- Worker Training

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SDS Format – Section Headings

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- Section 1, Identification
- Section 2, Hazard(s) identification
- Section 3, Composition/information on ingredients
- Section 4, First-aid
- Section 5, Fire-fighting measures
- Section 6, Accidental release measures
- Section 7, Handling and storage
- Section 8, Exposure controls/personal protection
- Section 9, Physical and chemical properties
- Section 10, Stability and reactivity
- Section 11, Toxicological information
- Section 12, Ecological information*
- Section 13, Disposal considerations*
- Section 14, Transport information*
- Section 15, Regulatory information*
- Section 16, Other information, includes the date of preparation or last revision.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15(29 CFR 1910.1200(g)(2)).

• Employers must ensure that SDSs are readily accessible to employees. See Appendix D of 1910.1200 for a detailed description of SDS contents.

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GHS Harmonized Elements (building Blocks)

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- Classification Criteria
 - A. Physical Hazards
 - B. Health Hazards
 - C. Environmental Hazards
 - D. Mixtures
- Hazard Communication
 - E. Labels
 - o Symbols/pictograms
 - o Hazard Statements (e.g., H200)
 - o [Precautionary Information (e.g., P201)]
 - o Product identifier/ingredient disclosure
 - F. MSDS / Safety Data Sheets
 - G. Risk-based labeling for chronics in consumer use

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Classification Physical Hazard

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- Explosives
- Flammable gases
- Flammable Aerosols
- Oxidizing Gases
- Gases under Pressure
- Flammable Liquids
- Flammable Solids
- Pyrophoric Liquids
 - » Gases
- Pyrophoric Solids
- Self-heating Chemicals
- Chemicals which, in contact with water, emit flammable Gases
- Oxidizing Liquids
- Oxidizing Solids
- Organic Peroxides
- Corrosive to metals
- Combustible dust

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Classification Health Hazard

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- Acute Toxicity
- Skin Irritation
- Eye Irritation
- Respiratory Sensitization
- Carcinogenicity
- Mutagenicity
- Reproductively
- Specific Organ Damage
- Aspiration Hazard

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GHS Decision Logic

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OSHA HCS 2012 – Health Hazards (Building Blocks)

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Hazard Class	Hazard Category			
	High Hazard		Low Hazard	
Acute Toxicity – Oral	1	2	3	4
Acute Toxicity – Dermal	1	2	3	4
Acute Toxicity – Inhalation	1	2	3	4
Aspiration Hazard	1			
Skin Corrosion/Irritation	1 (corrosion)		Irritation	
	1A	1B	1C	2
Eye Corrosion/Irritation	1	2(A)	2C	
Respiratory Sensitization	1	(1A)	(1B)	
Skin Sensitization	1	(1A)	(1B)	
Germ Cell Mutagenicity	1A	1B	2	
Carcinogenicity	1A	1B	2	
Reproductive Toxicity – Fertility	1A	1B	2	Lactation
Reproductive Toxicity – Development	1A	1B	2	
SpecTargetOrganTox – Single Expos	1	2	3	
SpecTargetOrganTox – Repeat Expos	1	2		
Simple Asphyxiant	1			

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Table A3.1.2: Hazard statement codes for health hazards

Code	Health hazard (statement)	Hazard desc. (GHS-English)	Hazard category (H)
H302	Harmful if swallowed	Acute toxicity, oral (category 3)	3
H303	Harmful if inhaled	Acute toxicity, inhalation (category 3)	3
H304	Harmful if swallowed and in contact with skin	Acute toxicity, oral (category 3)	3
H311	Harmful if inhaled	Acute toxicity, inhalation (category 1)	1
H312	Harmful if inhaled and acute toxicity (category 2)	Acute toxicity, inhalation (category 2)	2
H313	Harmful if inhaled and acute toxicity (category 3)	Acute toxicity, inhalation (category 3)	3
H314	Causes severe skin burns and eye damage	Skin corrosion/irritation (category 1B)	1A, 1B, 3B
H315	Causes skin irritation	Skin corrosion/irritation (category 2)	2
H316	Causes eye irritation	Eye irritation (category 2)	2
H317	May cause an allergic skin reaction	Sensitization, skin (category 1A)	1A, 1B, 3B
H318	Causes serious eye irritation	Serious eye, respiratory irritation (category 1A)	1A
H319	Causes eye irritation	Serious eye, respiratory irritation (category 2)	2B
H331	Harmful if inhaled	Acute toxicity, inhalation (category 1)	1, 2
H332	Harmful if inhaled	Acute toxicity, inhalation (category 2)	2
H333	Harmful if inhaled	Acute toxicity, inhalation (category 3)	3
H334	May be harmful to sensitive individuals	Acute toxicity, inhalation (category 1)	1
H335	May cause respiratory irritation	Sensitization, respiratory (category 1)	1, 1A, 3B
H336	May cause drowsiness or dizziness	Special target organ toxicity, single exposure, respiratory tract irritation (category 1)	2
H337	May cause asthma or worsen symptoms or breathing difficulties of asthmatic	Special target organ toxicity, single exposure, respiratory tract irritation (category 1)	2
H350	May cause genetic defects (acute or chronic effect of exposure of parents to their offspring)	Genotoxicity (category 1B)	1A, 1B
H360	May cause genetic defects (acute or chronic effect of exposure of parents to their offspring)	Genotoxicity (category 1B)	2
H370	May cause cancer (acute or chronic effect of exposure of parents to their offspring)	Carcinogenicity (category 1B)	1A, 1B

Source: Globally harmonized system of classification and labelling of chemicals (GHS), United Nations, 2009.

Codification of Hazard Statements

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- H = Hazard Statement
- 3 = Health Hazard
- 50 (cancer) = Hazard numbering

H350

May Cause Cancer

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HCS Pictograms & Hazards

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Health Hazard <ul style="list-style-type: none"> Carcinogenicity Mutagenicity Reproductive Toxicity Respiratory Sensitization Target Organ Toxicity Aspiration Toxicity 	Flame <ul style="list-style-type: none"> Flammable Pyrophoric Self-heating Highly Flammable Gas Self-reactive Organic Peroxide 	Exclamation Mark <ul style="list-style-type: none"> Irritant (skin and eyes) Skin Sensitizer Acute Toxicity Harmful Effects Reproductive Toxic Irritant Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder <ul style="list-style-type: none"> Gas Under Pressure 	Corrosion <ul style="list-style-type: none"> Skin Corrosion/Burns Eye Damage Corrosive to Metals 	Explosion Bomb <ul style="list-style-type: none"> Explosives Self-reactive Organic Peroxide
Flame Over Circle <ul style="list-style-type: none"> Oxidizers 	Environment (Non-Mandatory) <ul style="list-style-type: none"> Aquatic Toxicity 	Skull and Crossbones <ul style="list-style-type: none"> Acute Toxicity (fatal or toxic)

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GHS Label Elements

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Source: Globally harmonized system of classification and labelling of chemicals (GHS), United Nations, 2009.

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Label Elements Carcinogenicity

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Definition/critical description	Category 1A	Category 1B	Category 2
	Known or presumed human carcinogens	Presumed to have carcinogenic potential for humans – largely based on human evidence	Suspected human carcinogen
Symbol			
Signal word	Danger	Danger	Warning
Hazard statement	May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)

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If in Manufacturing

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- Revise SDS
- Revise Product Labels
- Revise In-Plant Labels
- Ability to Print in Red

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GHS Logic

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The flowchart illustrates the GHS logic process, starting with hazard identification and classification, leading to label creation and communication. It includes various hazard pictograms and signal words.

Source: Globally harmonized system of classification and labeling of chemicals (GHS), United Nations, 2009.

Product Lifecycle

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The diagram shows the product lifecycle stages: Inception, R&D, Manufacture, Transport, Pesticides, Food Drug Cosmetics, Consumer Products, and Disposal. Regulatory agencies are linked to specific stages: EPA (Disposal, Pesticides), OSHA (R&D), DOT (Transport), FDA (Food Drug Cosmetics), and CPSC (Consumer Products).

If-Worker Training

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GHS General Label Elements

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The diagram shows the layout of a GHS label with elements: Product Identifier, Signal Word, Hazard Statement, Pictogram, Precautionary Statement, and Supplier Information. It also lists corresponding UN codes for each element.

Source: <http://www.osha.gov/dsg/hazcom/ghs.html#2.4>

GHS Outer Container Label

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Toxflam Flammable liquid, toxic, n.o.s. (contains XYZ)
Danger! Toxic if Swallowed
 Flammable Liquid and Vapor
 UN 2592

Do not eat, drink or use tobacco when using this product. Wash hands thoroughly after handling. Keep container tightly closed. Keep away from heat/sparks/open flame. - No smoking. Wear protective gloves and eye/face protection. Ground container and receiving equipment. Use explosion-proof electrical equipment. Take precautionary measures against static discharge. Use only non-sparking tools. Store in cool/well-ventilated place.

IF SWALLOWED: Immediately call a POISON CONTROL CENTER or doctor/physician. Rinse mouth.

In case of fire, use water fog, dry chemical, CO₂ or "alcohol" foam.

See Material Safety Data Sheet for further details regarding safe use of this product.

MyCompany, MyStreet, MyTown NJ 08000, Tel: 444 999 9999

GHS Inner Container Label: Toxflam

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Toxflam (Contains: XYZ)
Danger! Toxic if Swallowed, Flammable Liquid and Vapor

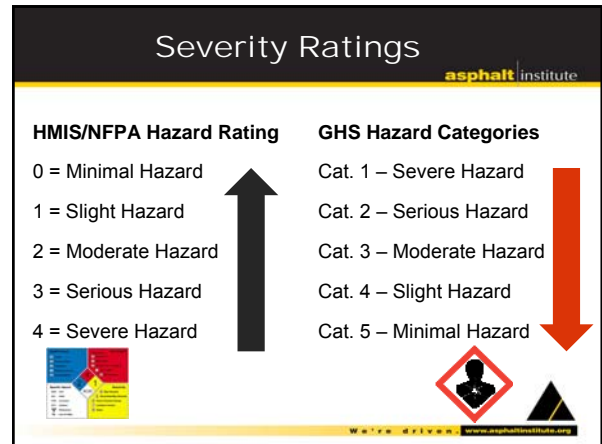
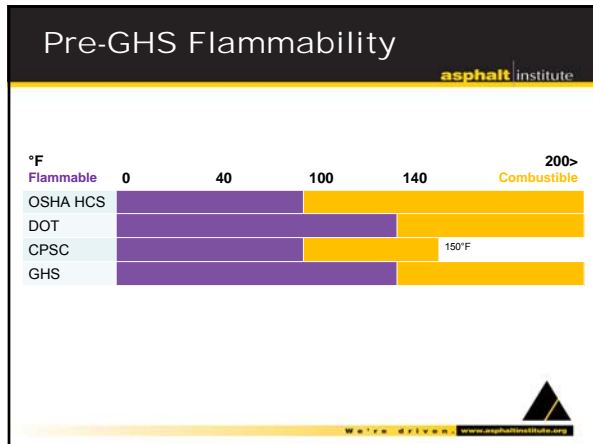
Do not eat, drink or use tobacco when using this product. Wash hands thoroughly after handling. Keep container tightly closed. Keep away from heat/sparks/open flame. - No smoking. Wear protective gloves and eye/face protection. Ground container and receiving equipment. Use explosion-proof electrical equipment. Take precautionary measures against static discharge. Use only non-sparking tools. Store in cool/well-ventilated place.

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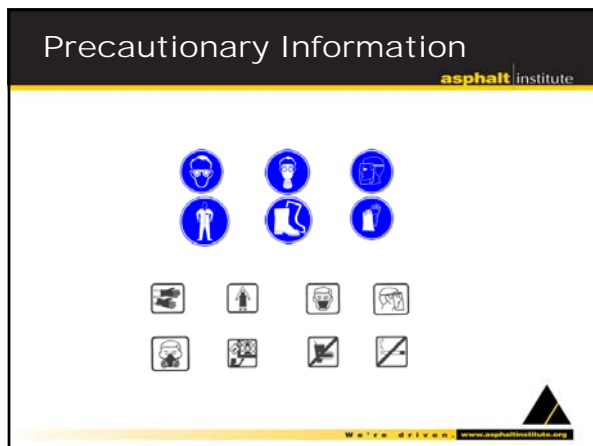
See Material Safety Data Sheet for further details regarding safe use of this product.

MyCompany, MyStreet, MyTown NJ 08000, Tel: 444 999 9999



HCS 2012 SDS & Label Guidance for Carcinogens

Source	SDS	Label
OSHA Carcinogen	X	X
NTP Carcinogen	X	X
IARC group 1	X	X
IARC group 2A	X	X
IARC group 2B	X	X
One positive animal study	X	Not required



Due Dates

Effective Completion Date	Requirement(s)	Who
December 1, 2013	Train employees on the new label elements and safety data sheet (SDS) format.	Employers
June 1, 2015* December 1, 2015	Compliance with all modified provisions of this final rule, except: The Distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label.	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers
Transition Period to the effective completion dates noted above	May comply with either 29 CFR 1910.1200 (the final standard), or the current standard, or both	Chemical manufacturers, importers, distributors, and employers

Advice

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- Check Awareness and Progress
- [Don't Try this at Home]
- Train-Train-Train
- Stay Tuned

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Area of Immediate Interest

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- SDS Sections
 - Preventive Measures
 - First Aid/Treatment



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First Aid Guidelines

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- AI Involved in Update
 - Member Request
- Engaged Outside Medical Experts
 - KY Regional Poison Control Center
- 1st Aid; Advice to ER Physicians; Paper
- Alerted Allied Associations
- Expect Completion-Distribution Soon

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Areas of Future Regulatory Interest

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- Asphalt Constituents
 - Hydrogen Sulfide
 - Naphthalene
 - PNAs
- Preliminary Initiatives
 - Evaluations by 'like' constituents

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Hydrogen Sulfide

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- Interested Parties
 - California OSHA, EPA, USCG
- Basis for Concerns
 - Low level exposures
- Industry Research Programs
 - Published & Presented at Tox Forum
- Coalition Sponsors
 - AI, API, TSI, AF&PA, CRI, ACCCA, CDC

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Naphthalene

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- What is Naphthalene
 - Chemical agent said to be smallest PNA
- How does that relate to Asphalt
 - Naturally occurring in the PPB range
- Why does it matter
 - IARC, CA classification; EPA IRIS office considering new risk assessment
- What's an IRIS
 - Integrated Risk Information System
- Who Else is Interested
 - Coalition: API, AAR, NC, AI, FHR
- What is this Coalition doing
 - Five yr, \$5M research, involving 3 Universities, 1 Institute
- When do we expect results
 - Public Symposium/workshop in 2013

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Preliminary Initiatives

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- Relative (Cancer) Potency Factor
- Updating of B(a)P Cancer Potency
- Issue: evaluation by substance or mixture
- Historically favored mixture as a whole
 - when data are available
- Takes us back to HazCom-2012
 - where we began

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Conclusion

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- IARC Monograph
 - May trigger future initiatives
- OSHA-HazCom-2012
 - Immediate concern; Long Time coming
- Interest in Asphalt Constituents
 - May occupy more of our attention
 - Over extended period of time
- Member Company Involvement Essential

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Questions/Comments

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- At SEAUPG-Next Two Days
- At AI-Anytime

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SDS Format	OSHA® QUICK CARD	OSHA® QUICK CARD
	Hazard Communication Safety Data Sheets	Hazard Communication Safety Data Sheets
	<p>The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs), formerly known as Material Safety Data Sheets or MSDSs, to communicate the hazards of hazardous chemical products. As of June 1, 2010, the HCS will require new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:</p> <p>Section 1. Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.</p> <p>Section 2. Hazard(s) identification includes all hazards regarding the chemical, required label elements.</p> <p>Section 3. Composition/information on ingredients includes information on chemical ingredients, trade secret status.</p> <p>Section 4. First-aid measures includes important symptoms/effects, acute, delayed; required treatment.</p> <p>Section 5. Fire-fighting measures lists suitable extinguishing extinguishers, equipment, chemical hazards from fire.</p> <p>Section 6. Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.</p> <p>Section 7. Handling and storage lists precautions for safe handling and storage, including incompatibilities.</p> <p><i>(Continued on other side)</i></p>	<p>Section 8. Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE).</p> <p>Section 9. Physical and chemical properties lists the chemical characteristics.</p> <p>Section 10. Stability and reactivity lists chemical stability and possibility of hazardous reactions.</p> <p>Section 11. Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.</p> <p>Section 12. Ecological information*</p> <p>Section 13. Disposal considerations*</p> <p>Section 14. Transport information*</p> <p>Section 15. Regulatory information*</p> <p>Section 16. Other information. Includes the date of preparation or last revision.</p> <p><small>*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15 (29 CFR 1910.1200(g)(2)).</small></p> <p>Employers must ensure that SDSs are readily accessible to employees. See Appendix D of 29 CFR 1910.1200 for a detailed description of SDS contents.</p>
	<small>For more information:</small>  <small>U.S. Department of Labor www.osha.gov (800) 371-6742</small>	<small>For more information:</small>  <small>U.S. Department of Labor www.osha.gov (800) 371-6742</small>