

GHS

The Next Step in HCS Evolution

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Introduction



Kami Blake – 3E Company Solutions Engineer

- Assess regulatory requirements, information management technology and effectiveness of existing HazMat programs to develop and re-engineer compliance solutions
- Prior to joining 3E in 2002, served in Quality Assurance, Supply Chain Management and Process Engineering roles in the biotech and medical device manufacturing industries
- U.S. Marine
 - Computer Programmer / Systems Analyst
 - Two time Navy Achievement Medal recipient for small systems implementation and training

Agenda



- Compliance History
- OSHA Update
- Focus on Hazcom Compliance
- GHS
- Preparation and Planning
- Regulatory Update

Compliance History



Prior to the 70s, legislative acts addressing hazardous chemicals were few in number and specific to a handful of topics, to include

- The Refuse Act of 1899 – Long ignored and rarely enforced designed to criminalize industrial discharges into bodies of water
- FIFRA 1947 – Originally considered an agricultural issue
- Atomic Energy Act 1954 – regulates the possession, development and use of Radioactive Material

When it came to workplace and community safety involving the handling, storage, disposal, transportation of hazardous materials, it was assumed that companies would do the right thing.

Compliance History



The early 1970s witnessed an environmental awakening. Most of the drivers for enacted legislation and creation of regulatory enforcement agencies was reactive.

Legislative Act

- CWA
- CAA
- SDWA
- NEPA
- CERCLA
- FIFRA amendments

- HMTA & RCRA

Drivers

- Detection of toxic substance in waterways
- Reduction of smog and air pollution
- Waterborne diseases, carcinogens, toxins
- Calvert Cliffs
- Love Canal
- Toxic effects on applicators, wildlife and consumer food supplies
- Transportation of hazardous waste to illegal dumpsites

Compliance History



The late 70's through the early 90's saw a transition from a reactive to a proactive/preventive approach.

- OSHA's Hazardous Communication Standard
- State Specific Legislation and Agencies
 - CAL/OSHA
 - CAL EPA
 - CEQA
- TSCA
- Additional Amendments and Re-authorizations

Product Lifecycle Compliance



Online Reference Regulatory Data Content Solutions

Transportation Services

Chemical Inventory & MSDS Management

Integrated Regulatory Data Content Solutions (SAP, WERCS, etc.)

Training

Emergency Response

MSDS Authoring & Distribution

Regulatory Reporting (Research, Permits, Disclosures, etc.)

Waste

Green Product Analysis

Regulatory Landscape

Chemical



GHS: Global Harmonization System



European Chemicals Agency



Registration, Evaluation, Authorization and Restriction of Chemicals

Workplace



Health & Safety Commission: UK

Transportation



Transport Canada



Environmental



Environment Canada



Security



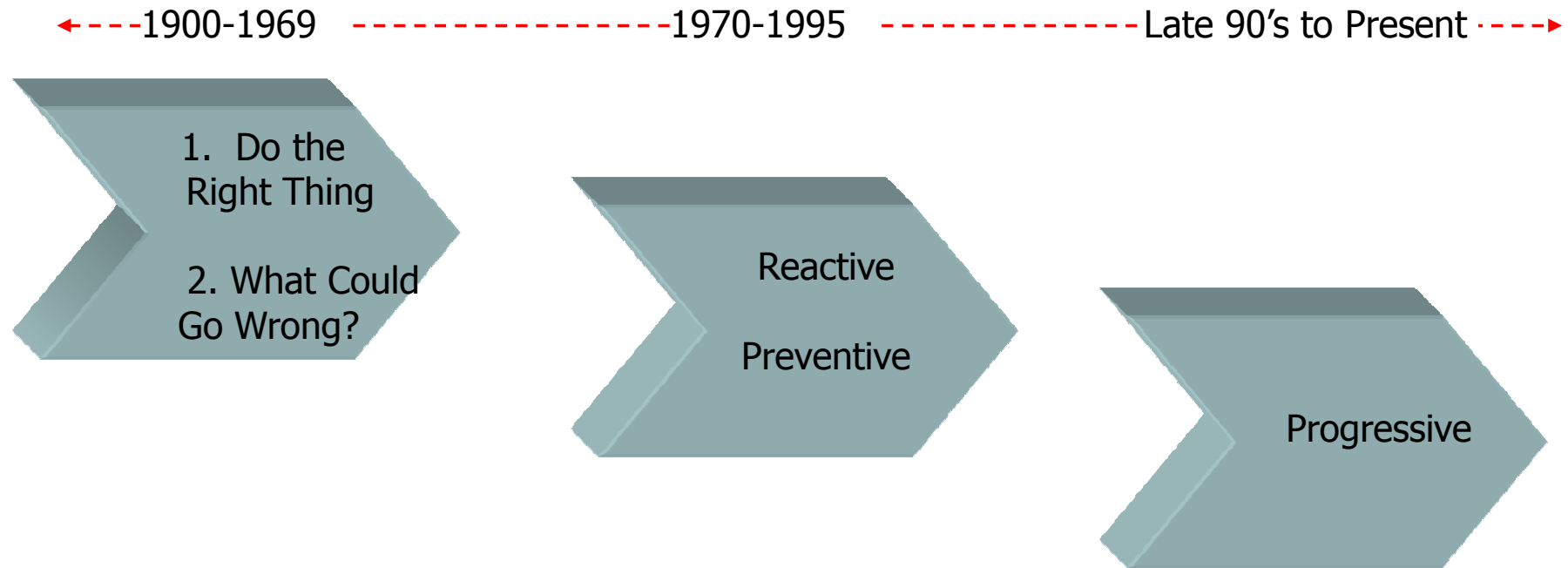
Local



Criminal



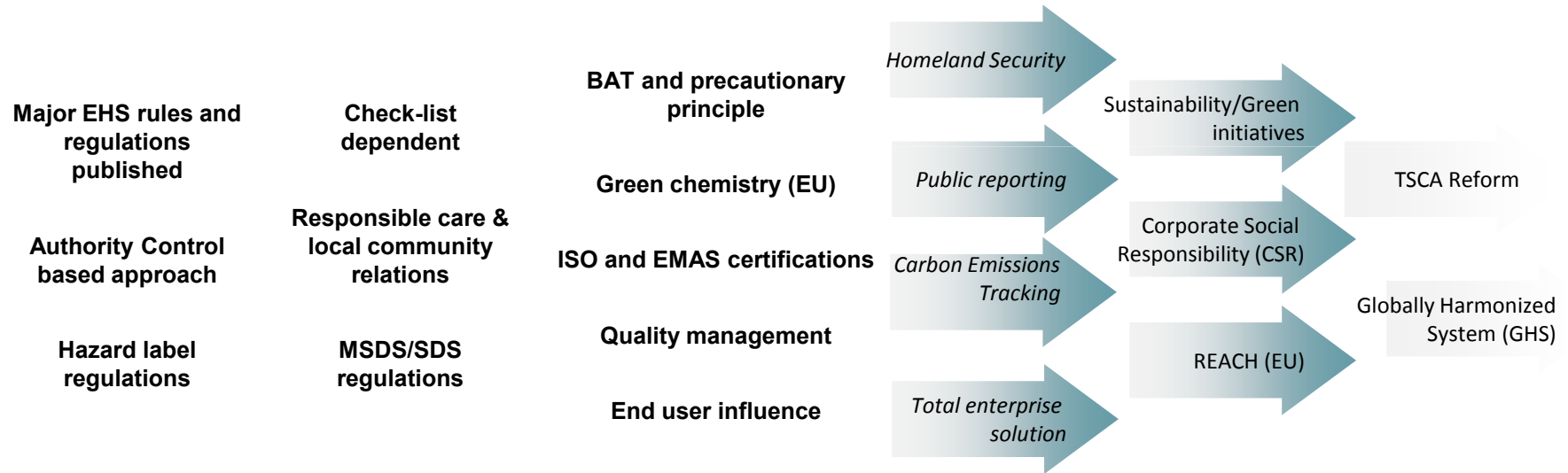
The Evolution of EH&S Compliance



Risks and Costs are Rising as the Regulatory Environment Expands



Current and Future Regulatory Drivers



EH&S compliance needs are pervasive and persistent across geographies and verticals

MSDS History



Material Safety Data Sheets (MSDS) - History

- 1940s - The Manufacturing Chemists' Association, produced "Chemical Safety Data Sheets" containing "Properties and Essential Information for Safe Handling and Use" Ultimately 100+ Data Sheets were produced that provided detailed coverage of each chemical, to the point of being a stand alone reference book on the product.
- November 25, 1983 - OSHA published the Hazard Communication Standard as 29 CFR Part 1910, adding 1910.1200. This initial standard applied only to SIC Codes 20 through 39.
- November 25, 1985 - Manufacturers and distributors required to provide MSDS to their customers. Though the standard does not require a particular format for the MSDS, it does specify what information must be included.
- September 23, 1987 - the requirements of the standard were extended to include "... all employers with employees exposed to hazardous chemicals in their workplaces."
- July 22, 2004 – OSHA publishes a recommended MSDS format / ANSI 16-section

Data Requirements



Evolution of MSDS Content

Basic Requirements

Product Name/Identity
Chemical Names (haz ingredients)
Physical & Chemical Characteristics
Physical & Health Hazards
Primary Routes of Entry
OSHA PELs & ACGIH TLVs
Applicable Carcinogen Listings
Appropriate Control Measures
Emergency & First Aid Procedures
Complete Supplier Contact Info
Emergency Contact Info
Date of Issue/Revision Date

ANSI 16-Section Format

Basic Requirements, AND
Fire-fighting measures
Accidental release measures
Handling and storage
Exposure controls/personal protection
Stability and reactivity
Toxicological information
Ecological information
Disposal considerations
Transport information
Regulatory information
Other information

OSHA Update

FY 2010 OSHA Statistics



- Increased Enforcement

- Conducted more than 41K inspections

- **15-year high and 5% increase over FY 2009**

- Issued more than 94K citations

- **Most in almost two decades and 7% increase over the previous year**

FY 2010 OSHA Statistics



- Most Frequently Cited Violations

- scaffolding standard, 1926.451
- fall protection, 1926.501
- **hazard communication, 1910.1200**
- respiratory protection, 1910.134
- ladders, 1926.1053
- lockout/tagout, 1910.147
- electrical wiring methods, 1910.305
- powered industrial trucks, 1910.178
- electrical general requirements, 1910.303
- machine guarding, 1910.212

The above represents 49 percent of all citations issued by OSHA in FY 2010

- Increased Penalties

As part of its effort to get tougher on enforcement, OSHA has levied greater penalties.

The average fine for a serious violation rose by **6%** in FY 2010, while the number of significant cases - those with fines totaling more than \$100,000 - increased by **37%**.

New Initiatives



Assistant Secretary of Labor David Michaels claimed:

“...investing in job safety happens only when they (employers) have adequate incentives to comply with OSHA's requirements. Higher penalties and more aggressive, targeted enforcement will provide a greater deterrent and further encourage these employers to furnish safe and healthy workplaces for their employees.”

New Initiatives



- SVEP (Severe Violator Enforcement Program)
 - Replaces Enhanced Enforcement Program (EEP)
 - Expands enforcement measures and penalties for willful, repeat, and failure-to-abate violations with a focus on
 - ⊕ fatality or catastrophe situations
 - ⊕ industry operations or processes that expose workers to severe occupational hazards
 - ⊕ **exposing workers to hazards related to the potential releases of highly hazardous chemicals**
 - ⊕ all egregious enforcement actions.

New Initiatives



- Internal Guideline Revisions
 - Expansion of time period for assessing a repeat violators (from three to five years)
 - Increase in the time frame for reviewing an employer's compliance history
 - Elimination an Area Director's ability to reduce a proposed penalty by more than 30 percent during an informal settlement conference
 - Expected increase in the average penalty for a serious citation from an average of \$1,000 to \$3,000 to \$4,000.

Hazard Communication Standard

HazCom in Focus



- Scope

OSHA estimates over

- 32 million workers are exposed to
- 650,000 hazardous chemical products at
- more than 3 million workplaces, and
- thousands of new chemical compounds and their variants enter US production facilities each year

Disaster, and even death, can occur if chemicals are unlabelled, mishandled, or mistakenly combined, and cumulative use of certain products can cause some workers to experience a serious, lifetime injury and/or illness.

HazCom in Focus



- 2010 Violations

Last year, OSHA issued 6,378 HazCom citations.

Companies were most often cited for

- Lack of a written program
- Little or no employee training
- Inadequate or inaccessible MSDS
- Improper or inadequate container labeling

HazCom in Focus



- HCS Required Elements (for communicating chemical hazards)
 - ✓ Accurate and accessible inventory list of hazardous chemicals in the workplace
 - ✓ Current and accessible MSDS for each item on the chemical inventory
 - ✓ Container labels and warning signs
 - ✓ HCS employee training
 - ✓ A written hazard communication plan that addresses all of the above

Global Harmonization for Classification and Labeling

Globally Harmonized System for Classification and Labeling of Chemicals

- A common and coherent United Nations approach to defining and classifying intrinsic hazards of chemical substances and mixtures, and conveying information about those hazards on labels and Safety Data Sheets (SDS)
- Criteria for hazard classification and hazard communication (Labels and SDS) are harmonized and standardized.



GHS Global Overview



- GHS legislation or standards have been passed in:

- Asia Pacific:

- New Zealand (2001)
- Japan (2006)
- Korea (2008)
- Taiwan (2008)
- Singapore (2008)
- Vietnam (2008)
- China (2009)
- Indonesia (2009)



- Europe

- EU (2008)
- Russia (2009)

- Africa

- South Africa (2008)

- Americas

- Brazil (2009)

GHS Global Overview



Draft regulations on GHS published:

- USA
- Australia
- Malaysia
- Philippines

Implementation activities

- Canada – GHS compliant SDS accepted with reference to WHMIS
- MERCOSUR countries – SDS standards
- ANDEAN Community – National Plan, capacity building
- UNITAR/ILO Global GHS Capacity Building Programme: Cambodia, Gambia, Laos, Nigeria, Senegal, Zambia
- Serbia, Croatia, Turkey
- Thailand



GHS – OSHA Proposed Rule



Proposal to modify the HCS to align with the GHS: OSHA is proposing to modify the current HCS to align with the provisions of GHS for Classification and Labelling of Chemicals.

Why modify the HCS: Adoption of GHS will not change the framework and scope of the HCS but will help ensure improved quality and more consistency in the classification and labeling of all chemicals. The harmonized format of the safety data sheets will enable workers to access the information more efficiently.

Major proposed changes to the HCS:

- **Hazard classification:** Provides specific criteria for classification of health and physical hazards, as well as classification of mixtures.
- **Labels:** Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
- **Safety Data Sheets:** Will now have a specified 16-section format.
- **Information and training:** The GHS does not address training, but the proposed HCS will require that workers are trained within **two years** of the publication of the final rule to facilitate recognition and understanding of the new labels and safety data sheets.

OSHA Proposed Rule Impact



- **Number of workers affected by the proposed HCS:** Over 40 million workers
- **Affected Industries:** Over 5 million workplaces
- **Annualized compliance costs of the proposed standard:** Approximately \$97 million per year, estimates as follows
 - **Re-classifying** chemical hazards (GHS criteria) and revising SDS and labels to meet new format and content requirements = \$11 million a year on an annualized basis for an estimated 90,000 establishments.
 - **Training** for workers to become familiar with new warning symbols and the revised safety data sheet format under GHS would cost \$44 million a year on an annualized basis.
 - \$42 million a year for **general management** to become familiar with the new GHS system and to engage in other management-related activities as may be necessary for industry's adoption of GHS.
- **Expected Date of Implementation:** September 2011

GHS Changes



Classification and Labeling Areas of Impact

- Health Hazards
- Physical Hazards
- Label format and content
- MSDS format, content, name change

Changes include the redefinition, expansion (addition), and elimination of existing hazards.






Full current HCS / GHS comparison table available at






<http://www.osha.gov/dsg/hazcom/docs/ghsoshacomparison.pdf>

GHS Changes

New Hazard Class Pictograms

GHS – Hazard Pictograms and correlated exemplary Hazard Classes

Physical Hazards				
				
Explosives	Flammable Liquids	Oxidizing Liquids	Compressed Gases	Corrosive to Metals

Health Hazards				Env. Hazards
				
Acute Toxicity	Skin Corrosion	Skin Irritation	CMR ¹⁾ , STOT ²⁾ , Aspiration Hazard	Hazardous to the Aquatic Environment

1) carcinogenic, germ cell mutagenic, toxic to reproduction / 2) specific target organ toxicity

GHS Changes

New Hazard Labels

CHEMICAL X

DANGER

HAZARD STATEMENTS:
Fatal if swallowed.
Causes severe skin burns and eye damage.

PRECAUTIONARY STATEMENTS:

- Wear protective gloves.
- Wear face protection.
- Do not eat, drink or smoke when using this product.
- Wash hands thoroughly after use.
- Store in a sealed container.
- **IF ON SKIN:** Rinse immediately with cool water.
- **IF IN EYES:** Rinse thoroughly with water and seek medical attention.
- **IF SWALLOWED:** Do not induce vomiting. Seek medical attention.

Dispose of contents/container in accordance with local regulations.
Chemical X Manufacturing, 1234 Over There St., (123) 456-7890

See the S.D.S for more information.

GHS Changes



Example: Physical Hazards (new GHS list)

Explosives

Flammable Gases

Flammable Aerosols

Oxidizing Gases

Gases Under Pressure

Flammable Liquids

Flammable Solids

Self-Reactive Substances

Pyrophoric Liquids

Pyrophoric Solids

Self-Heating Substances

Substances Which in Contact with Water Emit Flammable Gases

Oxidizing Liquids

Oxidizing Solids

Organic Peroxides

Substances Corrosive to Metal

GHS Changes



Example: Pyrophoric Substances

"Pyrophoric" means a chemical that will ignite spontaneously in air at a temperature of 130 deg. F (54.4 deg. C) or below.

"Pyrophoric Liquid": A pyrophoric liquid is a liquid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air.

"Pyrophoric Solid": A pyrophoric solid is a solid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air.

"Pyrotechnic substance": A substance or mixture of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative self-sustaining exothermic chemical reactions.

Preparation and Planning