Chemicals in Articles: A Global Auto Manufacturer's Perspective

Patricia Beattie, PhD, DABT
Director, Chemical Risk Mgmt
General Motors Corporation

Thomas Osimitz, PhD, DABT
President
Science Strategies, LLC

Presented at the Informal Workshop on Stakeholders' Information Needs on Chemicals in Articles/Products
Geneva, Switzerland – February 10, 2009

Overview

- Background
- Challenges and Issues Associated with Assessment of Chemicals in Articles
- The Suppliers Partnership for the Environment (SP) Approach
- Lessons Learned

Background

General Motors Corporation

- GM is one of the largest automobile manufacturers in the world
- Approximately 8.5 million vehicles produced annually
- 183 manufacturing sites worldwide (34 countries)
  - Assembly (83), Stamping (52), Powertrain (engine, transmission, foundries - 48)
- Extremely complex and global supply chain

Background

The Chemical Business at GM

- GM uses over 150,000 chemical products
  - Paints, lubes, etc.
  - Over 15,000 unique CAS numbers in manufacturing
  - Supplied primarily by formulators – not original chemical manufacturers)
  - OSHA regulated - familiar world

Background

The Chemical Business at GM

- Typical vehicle
  - 2000 assemblies (seat, steering wheel, etc)
  - Considering the sub-assemblies and components , ~15,000 parts
  - Outside “traditional” regulatory frameworks for chemicals

Background

The Chemical Business at GM and Auto Sector

- GM began collecting chemical information on parts in the early 1990’s
  - US, Opel and Saab divisions had lists of restricted and reportable chemicals
  - In 1999 - GM harmonized separate lists into a global specification, GMW3059
- Other auto manufacturers had similar, but different, specifications - driving complexity and cost across the supply chain

Background

The Chemical Business at GM and Auto Sector

- Auto sector created the International Material Data System (IMDS) for tracking chemical information in vehicle parts by 2000
- By 2005, the auto sector had harmonized the required chemical information in parts into the Global Automotive Declarable Substances List (GADSL)

Background

IMDS Statistics

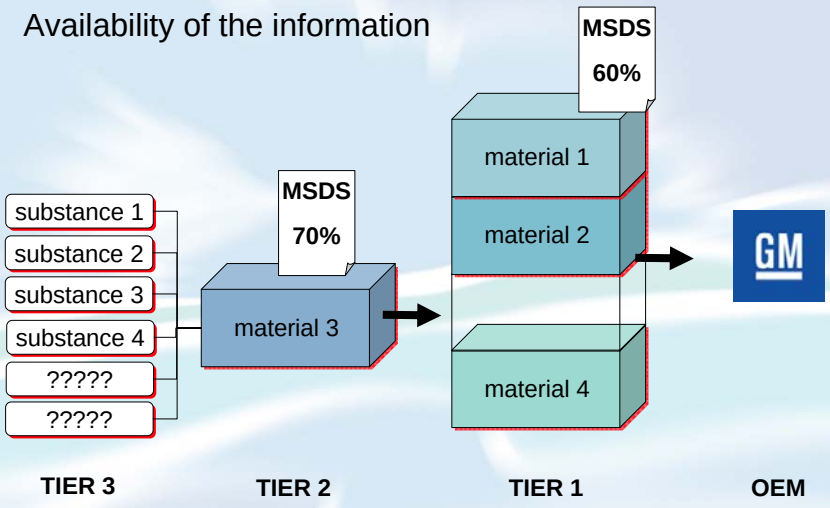
- 71,070 registered companies
- Approximately 178,000 registered users
- > 25,000,000 Material Data Sheets (MDS)
  - Each MDS represents an assembly
  - Includes material and substance information for complete assembly, including sub-assemblies and parts

Challenges and Issues

- Assessment of Articles Represents a New Paradigm for Most Companies Outside the Auto Sector
  - Manufacturers of articles are not chemical companies
  - Limited or no toxicological expertise
  - They may receive information on the articles (material) they buy, but not on the chemical substances used in the materials

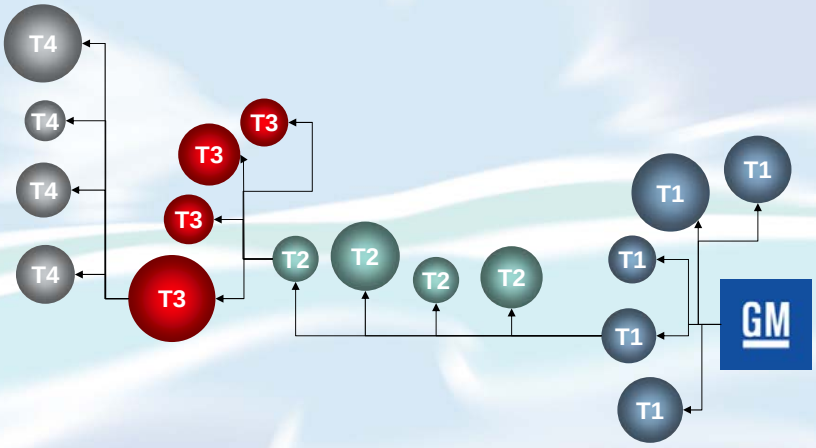
Challenges and Issues

Availability of the information



Challenges and Issues

Complexity of the information



Challenges and Issues

- Timing - Anticipating Future Concerns
  - GM is currently making material decisions for 2013 products – chemicals of concern today may not reflect those of concern by 2013
- Prioritization of actions
  - Eliminating heavy metals and other GADSL prohibited substances from products is underway
  - How should other reportable chemicals of concern be prioritized for action?
  - Most manufacturers do not have toxicologists or chemical experts in-house

Addressing the Challenges

- In 2002, GM led the formation of the Suppliers Partnership for the Environment (SP)
  - Bring auto manufacturers (OEMs) and suppliers together, in partnership with the US EPA to focus on environmental opportunities
- In 2007, SP hired Science Strategies, LLC to assist in developing a Material Health and Environmental Risk Assessment Strategy (MAS)
  - Goal - to develop a common screening process for assessing and prioritizing potential health and environmental impacts of chemicals in parts

Drivers for the Automotive MAS Process

- Proliferation of independent efforts
- Consumer and NGO concerns
  - Increasingly focused on the risk of chemicals in finished goods/ consumer products
- Emerging chemical regulations (REACH and others)

Characteristics of an Ideal Material Risk Assessment Process

- Be practical and scientifically valid, yet be as simple as possible - enabling all suppliers to participate
- Protect confidential data, yet share relevant risk assessment information
- Based on existing tools, systems and frameworks
  - EPA Sustainable Futures Tools, etc.
- Allow for flexibility - type of product, level of expertise, etc.
- Consider both toxicity and potential for exposure in the particular application (risk)

Characteristics of an Ideal Material Risk Assessment Process

- Could/would be overseen by a neutral, third party
  - For credibility
  - For protection of Confidential Business Information
- Accepted by NGOs and governments

The MAS Approach

- Phase 1 – Principles
- Phase 2 – Develop common risk assessment parameters and identify appropriate tools for identify the potential for ***human exposure in vehicle interiors***
- Phase 3 – Build upon Phase 2 to include potential for environmental risks from ***vehicle wear debris*** (brakes, tires) or other exterior materials
- Phase 4 – Build upon Phase 3 to include the potential for health and environmental risks from ***vehicle end-of-life activities***

We are currently wrapping up Phase 2

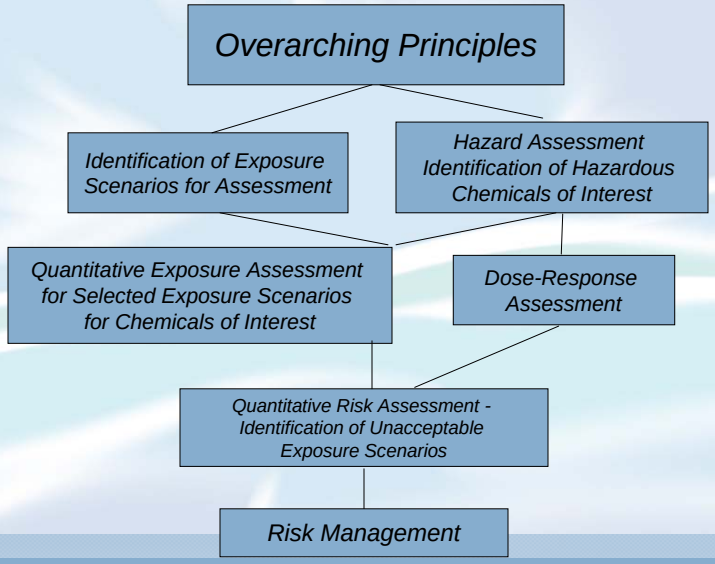
MAS Operating Principles

- Pursue Leadership
- Engage and Challenge All OEMs and Suppliers
- Seek a Harmonized Approach
- Practice Constant Improvement
- Be Flexible and Open to Change

MAS Assessment Principles

- Go Beyond Compliance - Beyond Lists
- Consider Risk as Well as Hazard
- Consider the Life Cycle

SP Materials Assessment Framework



SP MAS Work Products

- Principles
- Guidelines
  - Business Process
  - Hazard Assessment/Dose Response Assessment
  - Exposure Assessment
  - Risk Assessment

Benefits of the SP Effort

- Harmonized approach
- Best available scientific methods and data
- Comparable data assessment requirements across OEMs
  - Simplifies data reporting for suppliers
  - Streamlines review by OEMs
- Permits identification of chemicals and uses posing the greatest risk

Status of SP Effort

- Process guidelines nearly complete
- Separate effort underway to automate process
  - Subset of companies working with Science Strategies, LLC & SciVera, Inc.
  - Piloting and optimization
- Implementation
  - Voluntary - company-specific approach

Lessons Learned - Applicable to Assessment of Chemicals in Articles

- Unexpected complexity
  - Data systems
  - Supply chain relationships
- Hazard assessment
  - Limited data for many chemicals
  - Need to use and document expert judgment

Lessons Learned - Applicable to Assessment of Chemicals in Articles

- Harmonization is essential
  - Streamlines effort required at all stages
- Prioritization is essential - the role of risk
  - Incorporation of exposure and risk
  - Permits fact-based focus