Substances of Concern –
Chasing a Moving Target

SAE Green Engineering and Technology Transfer Workshop

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Company Information

- Arcalis Scientific, LLC is a scientific consulting firm; global services include:
  - Chemical policy and business strategy development
  - Green chemistry/ sustainable product evaluations
  - Regulatory and litigation support
- SciVera, Inc is a software service provider
  - SciVera Lens™ is a cost-effective, secure, Web-based solution that automates hazard, exposure and risk assessment for chemicals in products

Background

- Key to determining if a material is “Green” is an assessment of the health and environmental impacts of the chemicals that make up the material
- This assessment is relevant not only in manufacturing but also for the materials in the vehicle itself
- Auto-sector companies primarily make this assessment by managing to lists of Substances of Concern (SOCs)

Regulatory Drivers for Substances of Concern (SOCs)

- Initial substance restrictions began with elimination of certain Chlorofluorocarbons (CFCs) in the 1980s
- EU End of Life Vehicle Directive (2000) restricted the use of certain heavy metals – Pb, Cd, Hg, Cr^{+6}
- EU REACH Regulation (2006) defined Substances of Very High Concern (SVHCs)

Automotive Response

- In the late 1980s and ‘90s, auto manufacturers developed individual list of SOCs
  - Inconsistent across companies
  - Drove inefficiencies across supply chain
- By 2000, the auto sector had developed the International Material Data System (IMDS) to collect chemical data on parts

Automotive Response, cont.

- By 2005, the Global Automotive Declarable Substances List (GADSL) and process developed
  - Robust process – substances updated annually
  - Currently 139 substances/categories (approximately 2700 substances) prohibited and/or declarable
- In 2007, the Suppliers Partnership for the Environment (SP) – Material Assessment Strategy (MAS) begun
  - Common health and environmental hazard, exposure and risk screening process for substances in vehicle parts

Concern in dealing with SOCs

- EU REACH currently has 29 substances on the SVHC Candidate List
  - List is updated 2x's per year
  - Projected to eventually contain 200-300 substances
- Proposed California Green Chemicals regulation identified 16 substances and 29 Lists of Lists – approximately 10,000 SOCs
- New global regulations are more often focused on manufacturers of consumer products, not just chemical companies

Gestation of an SOC

- There is an evolution that occurs over approximately 10 years before a chemical becomes an SOC
  - Articles are published in the scientific literature
  - Information begins to be shared in the media and public press
  - Regulators get involved

Role for SAE Green Technology Center

- Provide forum to develop a more strategic approach for dealing with SOCs
  - Current tactical approach of waiting for SOCs to be added to a government list before acting is becoming unmanageable
  - Could a more proactive and predictive process be developed to get ahead of the regulators?
  - Could the GADSL list (and other lists/ data) be prioritized to identify the substances that might want to be designed-out before they become restricted?

SAE Green Technology Center – SOC Issues - Value to Automotive

- Auto companies and suppliers do not have the expertise in-house to develop a predictive SOC prioritization process
- Identification of SOCs will continue at an increasing pace
- Establishing a common approach would reduce costs and improve efficiencies
- Accelerated assessment of substances through the MAS process would benefit all
- Could be applicable to other industry sectors