



Case Study: Volvo Car Corporation

Managing Chemicals of Concern in Products and the Supply Chain

Volvo¹ was founded in Göteborg, Sweden in 1927. Since 1999, Volvo Car Corporation has been owned by Ford Motor Company.² Global sales in 2008 were 374,297 units, a decline from 2007, reflecting a globally weakened car market. The majority of Volvo's cars are produced in Göteborg, Sweden and Gent, Belgium, with a small number produced in China. Volvo Car Corporation employs approximately 20,000 people worldwide. The three core values of Volvo Car Corporation are quality, safety, and environment. Because care for the environment is a core value, the company is proactive about advancing environmental improvements in their vehicle design, even if, in some cases, consumers are not yet pushing for these changes. However, these changes are possible only if there is a business case for making the improvement. Volvo Car offers a range of models that use alternative fuels such as bioethanol. The company is also working aggressively to reduce CO₂ emissions. As of January 2008, all of Volvo's manufacturing facilities use hydropower, as one step in moving the company toward its climate neutral goal.³

IDENTIFYING, PRIORITIZING AND EVALUATING MATERIALS OF CONCERN

As a wholly owned subsidiary of Ford Motor Company, Volvo Car adheres to Ford's Restricted Substances Management Standard (RSMS). This standard includes reporting requirements and guidelines and a list of restricted substances. It also includes requirements for pre-registration reporting under REACH. In addition, the RSMS includes an engineering material specification that prohibits products from endangered species and requires that timber products be sourced from certified forests. In their Global Materials Integration and Reporting (GMIR) Supplier Portal, Ford provides a list of all parts and materials that need to be reported.

The RSMS list of 118 substances and substance categories is broader than the Global Automotive Declarable Substances List (GADSL), which includes only substances that will be present in the vehicle at the point of sale. The

RSMS list also includes process chemicals such as nonylphenols and chlorinated solvents used in cleaning and degreasing. This standard is quite detailed. Volvo is considering simplifying the list for suppliers by referencing the GADSL and then listing additional substances, rather than merging these lists together.

The Volvo Car Corporation works to identify emerging chemicals of concern by gathering data on new legislation, customer and non-governmental organizations (NGO) concerns, and reviewing information supplied by chemical market experts and other sources. From this intelligence, the company identifies current and future priorities for chemicals management.

Volvo Car Corporation has been quite active in work on the GADSL. Through this effort, the company has built regional and sector-based networks. The Global Automotive Stakeholders Group (GASG) meets annually to update the GADSL. Technical teams composed of chemical experts from car companies prepare dossiers that provide toxicity information to the GASG. This process is an excellent source of information exchange on industry trends and future chemical concerns. Our interviewees commented that participating in GADSL has been a difficult and challenging process, but the auto industry has learned through this engagement that there are benefits to sharing information.

TRACKING MATERIALS OF CONCERN AND COMMUNICATION WITH THE SUPPLY CHAIN

Volvo has a centralized process for specifying supplier requirements. Suppliers are required to comply with Ford's RSMS, described above. Suppliers throughout the auto industry use the International Material Data System (IMDS) for reporting on materials of concern. Ford requires suppliers to report on all GADSL substances and to provide information on materials composition, including type and weight. Our interviewees noted that, when first developed, suppliers had a lot of difficulty inputting data properly into IMDS, but by this time most suppliers understand and use the system accurately. At Volvo the reporting by suppliers on materials



is at about 95%. The company receives approximately 18,000–20,000 data sheets annually on parts and components. Two employees review these data sheets and develop reports on chemical phase-out and elimination.

Volvo does not specify that suppliers test parts for verification. However, suppliers are expected to provide accurate data and are liable if problems occur. Tier 1 suppliers generally work with their Tier 2 suppliers to correct problems when they arise.

One of Volvo's biggest challenges in working with its suppliers is that they are a relatively small car company and therefore a relatively small customer for many large suppliers. If Volvo wants to make a change in a part, they need to find a supplier that is willing to work with them to make the change. This is not always easy. Volvo needs to build a case for these changes, both from an economic perspective and in marketing these changes to its customers.

COMMUNICATION WITH CONSUMERS ABOUT ENVIRONMENTAL IMPROVEMENTS

Volvo has developed a tool called Environmental Product Information (EPI) that provides detailed information to consumers on many different environmental aspects of a vehicle. This tool used to be called an Environmental Product Declaration, when Volvo used a third party to certify to the ISO standard 14025 for environmental products. Environmental Product Information is no longer third party certified (a cost savings for Volvo) but is still prepared according to the requirements of the ISO standard. The EPI includes six areas: environmental management, in-car environment, life cycle, production impacts, useful life and recycling.

Volvo is a leader in ensuring that its cars provide healthy indoor air quality. The in-car environment addresses cabin air quality, allergies, odors, hexavalent chromium, and certification of fabrics and leather by the Öko-Tex 100 Standard. The Öko Tex 100 standard is designed to protect the consumer. Finished fabrics with this label must not contain toxic residues, such as carcinogenic dyes, pesticides, formaldehyde or heavy metals.⁴ All of Volvo's vehicles use fabrics that have been certified according to the Öko-Tex Standard 100. In addition, the Swedish Asthma and Allergy Association certify that Volvo's vehicles have good interior air quality.

Volvo Car requires that its suppliers have third party certified environmental management systems. As of 2006, 88% of suppliers have achieved this goal.⁵ Volvo also encourages its dealerships to implement environmental management systems (16% had implemented systems by 2006).

In addition, as part of the EPI, Volvo evaluates production impacts including solvent use, efficiency of materials use, and energy consumption. The company evaluates emissions during the use of the vehicle, including hydrocarbons, CO₂, and legally controlled emissions. Also, Volvo measures its

use of non-metallic recycled materials. Estimating that 30 kg recycled non-metallic materials could be used in a new car, Volvo compares that amount to what is used in its models. For example, the Volvo S40 used 14 kg in 2007, 47% of what Volvo approximates is possible.⁶

MANAGEMENT STRATEGIES TO IMPROVE ACCOUNTABILITY FOR MANAGING MATERIALS OF CONCERN

When asked about management strategies to improve accountability, our interviewees replied that they are a typically Swedish company. That is, the Swedish culture encourages collective responsibility, rather than focusing on the personal responsibility of the CEO or vice president. At Volvo Car, what this means is that all employees are collectively accountable for meeting environmental, quality and safety goals.

The departments of product planning and market intelligence work together to decide on approximately 40 elements that will be used to compare Volvo's vehicles to its competitors. These include aspects such as materials, recycling, emissions, fuel economy, how often parts are changed, etc. These aspects are the starting points for development of new products and are translated into technical requirements for vehicles. Success is measured by rating Volvo's products against these key targets.

DESIGN TOOLS FOR EVALUATING CHEMICALS OF CONCERN AND DESIGNING GREENER PRODUCTS

As described above, Volvo's product planning and marketing groups identify a number of elements that are the starting point for the development of new products, such as fuel economy, weight, crash performance, and environmental impact. Employees in the company are identified as attribute leaders. For example, Andreas Andersson is an attribute leader for the environment and so is responsible for defining key elements of environmental impact and translating these into technical requirements at the system level, for example, specifying what these elements mean in terms of materials use. In this way, the environmental attributes become specifications for design engineers and so are integrated into product design. In the 1990's, Volvo developed a life cycle analysis tool called the Environmental Priorities Systems (EPS) to evaluate the health and environmental impacts of chemicals and materials in Volvo vehicles. Each chemical or materials was given an Environmental Load Unit (ELU) that measured its impact.⁷ Although this tool is no longer used, from this effort Volvo learned the importance of focusing on fuel consumption and weight and has developed design specifications in regard to these issues. The work of the attribute leaders today builds on this earlier analysis.

In addition, Volvo uses a database developed by ChemSoft to review Material Safety Data Sheets and



evaluate new chemicals for any worker safety concerns. The industrial hygiene review is conducted independently of an environmental assessment of a chemical or material. If the chemical fails in either review, it is not acceptable for use in Volvo vehicles.

LESSONS LEARNED

- **Company core values can provide a focus for improving products.** Care for environment is one of Volvo's three core values, along with safety and quality. This focus on the environment has provided support for a variety of innovations, such as improving air quality inside a vehicle by choosing fabrics that meet the Öko- Tex 100 standard.
- **Participation in the GADSL process is a useful means of information gathering and exchange.** Volvo's engagement in the GADSL, a globally harmonized list for suppliers, has provided a valuable opportunity for exchange of information about chemicals.
- **It is important to educate customers and encourage them to value environmental improvements.** Volvo's Environmental Product Information is valuable for communicating to customers about the company's environmental efforts.
- **Designers need information on technical specifications to implement environmental improvements.** The role of the attribute leader is critical as he/she translates environmental and other requirements into technical specifications for designers.

ENDNOTES

- 1 For this research, we interviewed Andreas Andersson and James Lundstrom of Volvo Car Corporation.
- 2 Volvo Group is a separate corporation and includes the following business units: trucks, buses, penta, aero, construction equipment and financial services. See: http://www.volvo.com/group/volvosplash-global/en-gb/volvo_splash.htm
- 3 <http://www.volvocars.com/intl/corporation/FactsandFigures/Pages/default.aspx>
- 4 See <http://www.oeko-tex.com/en/main.html>
- 5 <http://www.volvocars.com/uk/footer/VCC/EnvironmentalProductInformation/Pages/EnvironmentalManagement.aspx>
- 6 <http://www.volvocars.com/intl/corporation/FactsandFigures/EnvironmentalProductInformationEurope/Pages/Recycling.aspx>
- 7 <http://www.autoworld.com/news/volvo/Environment.htm>

This document is one in a series of five case studies prepared as part of a project assessing strategies for improving management of materials of concern for United Technologies Corporation. For more information or to download the other case studies, visit www.chemicalspolicy.org.

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