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Paul Suff hears how the world's major aerospace companies established a global environment group to collaborate on REACH



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Manufacturing aeroplanes is a complex process, involving the production of a wide range of components from around the world. It is also an industry in which competitors often use the same suppliers.

Original equipment [manufacturers](#) [4] (OEMs), like Airbus and Boeing, which dominate the global manufacture of large passenger aircraft, and Brazil's Embraer and Canada's Bombardier, which produce the majority of smaller, short-haul jets, rely on a common group of tier-one suppliers, such as engine producers GE and Rolls Royce, and makers of avionics systems like Thales and Honeywell. Below them, many of the same tier-two and tier-three suppliers provide a multitude of components and parts.

To develop a common set of standards across the [supply chain](#) [5] and ensure the sector's environmental impacts, which are increasingly under scrutiny, are addressed cost-effectively, 11 major companies formed the [International Aerospace Environmental Group \(IAEG\)](#) [6] in September 2011.

"IAEG is a non-profit forum to develop industry-wide consensus on standards for emerging health and environment issues, such as chemical material declarations and reporting requirements," says Christer Hellstrand, chair of the organisation and director of capabilities and compliance for environment, health and safety at Boeing.

REACHing for a common approach

The advent of new environmental requirements, notably the introduction of the [EU REACH Regulation](#) [3] on chemicals, was the spur for the IAEG.

Communication about the hazards and uses of substances along the supply chain is at the heart of REACH. It requires suppliers, for example, to provide core hazard data on substances –

including details of a chemical's properties, uses and safe handling methods – to the European Chemicals Agency (ECHA) in Helsinki.

It also requires firms to communicate risk management measures to the users of those substances, such as aerospace OEMs. Where substances are identified as being of very high concern and included in the REACH candidate list, art.33 stipulates that suppliers of “articles” – everything from aero engines to mobile phones – containing the substance in a concentration above 0.1% have to provide enough information to allow for the article's safe use by recipients.

The aerospace industry uses a range of substances and speciality chemicals, so simplifying the exchange of substance data has been a priority for the IAEG. “Asking suppliers for information on a common list of substances and in a common format increasingly made sense to OEMs like Boeing and Airbus,” says Hellstrand.

Steve George, REACH programme executive at engine company Rolls-Royce, comments: “Customers all want the same information but, unless the industry adopts a common approach to disclosure, you risk having to supply the necessary data in a number of ways. That is very inefficient.”

The focus of IAEG since 2011 has, therefore, been on developing an industry standard for communicating the chemical content of products, together with agreeing a declarable substance list and the data that suppliers need to disclose.

“So far, 80% of the work of IAEG has been on chemicals,” reports Nigel Marsh, global head of environment at Rolls-Royce. “It's about the industry working together to identify where substances are being used and, where necessary, develop a plan to phase them out and deliver substitutes, as well as raise awareness of any issues concerning new substances coming on to the market.”

George adds: “Having a declarable list, keeping it up to date, and knowing exactly what materials and hazardous substances each component contains means the industry is better able to manage the impacts of REACH, in terms of compliance and in managing supply chain continuity. The system will take time to mature, but it will eventually become easier to check each substance and component, reducing the burden across the industry.”

Hellstrand says that [aerospace](#)^[2] is simply following the path pioneered by the automotive industry. In 2000, the sector created its international material data system – which is the repository for product content and is used by vehicle manufacturers and suppliers to gather data for various reporting requirements – and, in 2009, the first version of the global automotive declarable substance list followed. Hellstrand confirms that IAEG is on track establish the first voluntary, global declarable substance list for the aerospace industry.

Once the standard has been agreed, the next step will be to ensure it is accessible across the industry. Having agreed the data requirements, George explains that the final hurdle to overcome before it can become the de facto industry-wide standard is an IT one, as companies invariably operate different computer systems. “Small firms may only use Microsoft Office, for example, so we need to have a data exchange system that works efficiently for all suppliers,” he says.



Permission to continue

Widely available data on substances and materials will also help the aerospace industry's ongoing management of REACH and similar regulations, particularly in identifying and managing priority chemicals. Under the Regulation, the continued use of substances of very high concern, such as persistent bioaccumulative toxic compounds, must be authorised.

Companies have to apply for authorisation to use the substance in specific circumstances and demonstrate that the risks associated with use are either adequately controlled or that the socioeconomic benefits outweigh the risks. If a firm fails to meet these requirements it must switch to other safer, alternative substances or technologies.

"There are some substances we know won't be available in the future, which could limit our access to a coating or an alloy, so we have to identify an alternative," says Marsh. Aerospace products, however, typically have 25–30 year lifespan, so there is a degree of caution when considering substitutions. "We have to be able to ensure performance and reliability and ask if the new coating is as good as the previous one, for example."

George also points out that the REACH candidate list – the first step towards a substance requiring authorisation and which, at the end of 2013, contained 151 substances – is updated every six months, so it is important that the industry knows where these substances are being used and develop a common approach to the authorisation process. He cites hexavalent chromium as an example of where the industry needs to adopt a common authorisation process.

"Hexavalent chromium provides wonderful corrosion protection and we do not want to compromise on product quality, but it poses a health risk to workers," says George. "So, we need to move away from using hexavalent chromium where we can, and use it responsibly where we cannot."

Last year, Rolls-Royce became the first company to seek an authorisation under REACH. This is for the continued use of bis(2-ethylhexyl) phthalate (DEHP), which the company uses during the diffusion bonding and manufacture of aero-engine fan blades. The scientific committees of the ECHA concluded in January that adequate control had been demonstrated by Rolls-Royce for

the specific use applied for. The final decision to authorise continued use of DEHP by the aero-engine firm will be made by the European commission.

Going further

Chemicals are not the only focus of IAEG, however. It has established two further working groups. One is developing guidelines for reporting greenhouse-gas (GHG) emissions by the industry. IAEG has been working with the [World Resources Institute](#) ^[7] (WRI) on the guidance. It will be a supplement to the GHG protocol, the widely used international accounting tool for emissions. Hellstrand says the aim has been to produce consensus on a voluntary standard to be used by aerospace companies. A draft was agreed in October 2013 and was out for comment until 17 January. Final approval will be sought at the IAEG annual meeting in Cincinnati in April.

The global nature of the aerospace industry means that English is not the first language for many suppliers, which can create confusion and be a barrier to effective collaboration. So creating a standard set of environmental vocabulary to replace the multiple forms of jargon used throughout the [supply chain](#) ^[5] has been the focus of an IAEG working group. Hellstrand reports that the first version of the common vocabulary has more than 1,000 entries, and is now being tested. It is expected go live later this year, and IAEG is considering making it public.

Hellstrand says IAEG will establish further working groups as issues emerge that affect the whole industry. "Members of the working groups are all volunteers, so we need to prioritise and not take on too much."

United aerospace

One challenge IAEG had to overcome was an initial reluctance to share information. "There is a lot of proprietary information in our products, so we've had to carefully handle issues of intellectual property and patents," explains Hellstrand. "We have successfully established a process that allows us to do that now."

"The compliance rules are read out before the start of every meeting, so everyone knows what is and isn't acceptable," says Marsh, who had previously been a member of ASD, the trade body for the aerospace and defence industries that worked on the REACH Regulation before its implementation in 2007. Marsh says that REACH was, and remains, a big challenge for the sector so the business case for IAEG was very strong.

"The whole aerospace industry faces the same issues and concerns with REACH but there was no unified voice to raise them. Aerospace already had a mature group for quality, which was working well, so setting up a similar body for the environment and casting aside concerns about working with competitors has not been a problem."

IAEG has more than doubled in size since 2011 and its members now represent more than half the world's aerospace market by revenue. Marsh expects more suppliers to join, particularly once the first tools, such as the standard on reporting chemical content, become available.

"I can see the group growing to more than 100 companies," he says. "Aerospace companies from Brazil, the EU and the US are already well represented, but we need to get more firms in Asia involved as many of our suppliers are located there."

With other countries, including China and Korea, pursuing their own versions of REACH, expansion of IAEG almost guaranteed. “The EU has led the way on chemicals, but aerospace is a global industry. What we put in place to manage substance use here will need to satisfy regulations around the world,” says Hellstrand.

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