

Over the past three decades, the solvents industry has implemented measures to address concerns about environmental performance, especially related to air quality. In fact, air quality in Europe has continuously improved during this period. Solvent manufacturers are committed to working with industry partners, scientists and legislators to further explore the need and the means to improve air quality in a cost-effective manner. Most organic solvents rapidly biodegrade in the air, soil or water, i.e., they do not bioaccumulate or persist in the environment, and have relatively low ecotoxicity.

Man-made chemicals, including solvents, are used in everyday items such as paint, cosmetics and cleaners to protect, beautify and clean. Solvents used in products such as coatings, inks, and consumer products generally emit substances classified as VOCs (Volatile Organic Compounds). These emissions are controlled through incineration, recycling or using control technology. A solvent may, in certain situations, be emitted into the air after performing its function in an industrial application or in consumer products.

- Most organic solvents rapidly biodegrade in the air, soil or water, i.e., they do not bio-accumulate or persist in the environment, and have relatively low ecotoxicity.
- Air emissions from organic solvents degrade readily. Their typical atmospheric lifetime is of a couple of days. It is only in the presence of NO_x and sunlight that solvents contribute to ground level ozone, which at a certain level can impact negatively on Air Quality (for more information on ozone, see also the fact sheet, "Solvents and Ozone").

- **New production** facilities – to make more efficient solvents with reduced environmental impact.
- **Research and development** – to produce new solvents, formulations and ways to manage their use.
- **Technical support** – to help customers improve their own systems and understand the options for controlling emissions.
- **Independent environmental research** – to understand and identify the most efficient way to minimise the impact of solvent products.

Compared to 1980, improved solvent management and efficiency have reduced the amount of solvents needed to produce a finished object by half. Furthermore, industrial VOC emissions have been reduced by a factor of 2 (47% on average and up to 64% in some sectors) in about 10 years.

TECHNICAL PERFORMANCE: INCREASED EFFICIENCY AND LOWER MAINTENANCE COSTS

- Solvent-based paints are associated with durability (i.e. long-lasting finishes: if you use low VOC products but have to repaint more often, the net environmental balance is zero or negative); as well as cost-effective (the raw materials are cheaper) and appropriate for all weather conditions.
- Solvents can extend the life of products through durable protective coatings – this means less corrosion, rust prevention and scratch resistance and therefore a longer life for objects as diverse as cars and bridges (i.e. less repainting). It even means solvent based adhesives provide the most durable shoe soles!



WHAT IS INDUSTRY DOING?

The solvents industry is committed to protecting and enhancing both the environment and society as a whole by ensuring that solvents are used to their best advantage from the beginning to the end of their life cycle.

For over 25 years the solvents industry has made substantial investments to meet current and future market needs and environmental targets:

THE SOLVENTS INDUSTRY AND RESPONSIBLE CARE®

Responsible Care is the chemical industry's voluntary commitment to continually improve all aspects of health, safety and environmental performance and to openly communicate about its activities and achievements.

REDUCED ENERGY CONSUMPTION, LOWER MANUFACTURING COSTS

- Solvent based paints and inks mean faster, more controlled evaporation, reducing the drying temperature required and resulting in higher productivity with less energy use. For example, solvent based paints dry up to 10 times faster at room temperature than alternatives, keeping production rates up, costs down and minimising energy consumption. This is the primary reason why solvent-based coatings still account for a majority of the industrial coatings used in Europe. Where solvent-based formulations are needed, industry has found efficient ways of dealing with their emissions to protect health and the environment.
- The films in food packaging help protect and safeguard food. Solvents are used to produce these coatings and ensure a high quality film. Manufacturers reduce energy consumption during production by capturing evaporated solvents in direct-fired ovens. This fuels the process, thus conserving other fuel resources and reducing costs.

CONSERVING RESOURCES, REDUCING PRODUCT COSTS, REDUCING WASTE

- Electrostatic paint spraying is the most efficient spray process from an environmental and cost perspective because it minimises the total amount of paint required and dramatically reduces spray waste. Solvent based paints make this technique possible because they are non conductive.
- Solvent based herbicides increase their success rate simply by making the agrochemical water-resistant, covering foliage efficiently. It therefore significantly reduces the total amount of herbicides and pesticides required.

SOLVENTS HELP PROTECT THE ENVIRONMENT

- Pentanes have replaced CFCs (ozone depleters) in a number of applications such as polyurethane insulating foams.
- Solvents are key to the manufacturing of some water treatment chemicals, essential to treat waste water and make it drinkable.
- Solvents are used to dissolve fuel borne catalysts required for diesel particulate filters to control vehicle exhaust emissions (adding this type of catalyst to diesel fuel enables the diesel particulate filter to regenerate itself economically and safely, dramatically improving the operability and applicability of the diesel particulate filter).

THE SOLVENTS INDUSTRY AND PRODUCT STEWARDSHIP

Product Stewardship is about managing responsibly the health, safety and environmental aspects of a chemical product throughout its lifecycle. It is Responsible Care® applied to products. The purpose of Product Stewardship is to prevent injury to human health and damage to the environment in two main ways:

- Reducing the actual and potential risks associated with the manufacture, packaging, distribution, handling, use and disposal of solvents.
- Improving product design, assessment practices, advice, education, communication and customer support.

Product Stewardship covers all stages of a product's lifecycle – initial concept, design, research and development, the sourcing of raw materials, manufacture, storage, distribution, applications, reasonably foreseeable uses, recycling and disposal. It requires management, employees, contractors, customers and all those involved in the supply chain to work together in following safe, environmentally sound practices.

By adopting Product Stewardship, companies of all sizes can play their part in protecting people and the environment from potential harm. Although companies are technically liable only for that part of the supply chain that they themselves manage, they need to be concerned with everything that happens to their products from start to finish.

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