

1 Preventing accidents and preparing for emergency situations

1

Strategy

- Designing, building, operating and maintaining our installations with a view to minimizing the risks and aiming at "zero accidents".
- Giving priority to intrinsic safety for substances, processes and equipment.
- Using safety-management systems reflecting the principle of continuous improvement, and periodically having their performance assessed by auditors from outside the site.
- Deciding on local action plans that include the Group's targets.

Sites complying with the Risk engineering audit programme of the Group

100%
% of sites

An environmental incident that could have had more serious consequences

One of the main environmental accidents to have occurred recently was close to the Bernburg plant in Germany, which produces sodium carbonate. One of the embankments enclosing a sedimentation basin collapsed, over a length of 200 meters, causing an outflow of slurry onto a road adjacent to the site. The sedimentation basin is used to separate suspended inorganic matter from the aqueous effluent arising from the production of soda ash.

The accident was linked to a change in the drainage conditions from the sedimentation basin, leading to excessive pressure on the containing walls. Using infra-red cameras, the police were able to confirm very quickly that nobody had been caught up in the collapse. We then recovered the residues and subsequently installed additional equipment to detect any abnormal increase in pressure on the embankments. The accident had no lasting impact on the environment.



Adopting reference "tools" throughout the Group, together with appropriate management systems and verification, is helping produce a common approach to protecting against risks and harmonizing performance Group-wide (*). The "tools" used to identify and assess the potential hazards include the Safety Integrity Level (SIL) method for the design of instrument-controlled safety arrangements and HAZOP (Hazard & Operability) studies for all proposed new or modified installations. Risk-based Inspections are used as the basis for programs to inspect physical integrity, and these are fine-tuned to suit the risk level of the installations and equipment being considered.

There are ad hoc safety management systems in operation at all the major-risk sites (referred to in Europe as "Seveso sites"), of which there are about 40. The verification of systems are both internal and external. In these classified sites, specific safety management systems and risk prevention systems are in place. Emergency preparedness and public information plans have been developed in compliance with regulatory requirements. Exercises and simulations are held periodically, to check on and improve the plans and their practical application.

All the industrial sites undergo periodic "risk-engineering" audits, with input from external experts. These audits are carried out at intervals of three to five years; they monitor the physical and functional integrity of installations, looking also at management systems designed to protect against incidents and various forms of deterioration, damage and loss. The observations made in the course of these audits serve as a basis for drawing up improvement plans. Such plans are monitored using an information system covering all the Group's management units.

Safety management is supervised by the Health, Safety and Environment Competence Center ■

(*) See Systems and tools, page 88

Targets for 2012

- Extending the Risk-Based Inspection system for predictive examination of the physical integrity of installations to all the Group's major-risk sites.
- Obtaining OHSAS 18001 (**) or equivalent certification for safety management systems at 30 sites
- Introducing new performance indicators relating to control of technological risks (technical safety).
- Harmonizing the reporting of technical incidents, and improving the use made of feedback from experience.

(**) OHSAS 18001: Occupational Health and Safety Assessment Series 18001: standard compatible with ISO 9000 and ISO 14001.

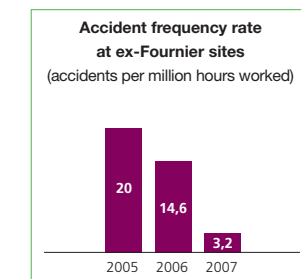
See also the Targets for 2012 regarding the safety of persons, in the "Employees and subcontractors" chapter, page 63.

2 Health, safety and environment management in newly acquired plants

2

Strategy

- Drawing up an in-depth inventory for the situation at sites which have been acquired.
- Working out improvement programs to bring those sites up to the level of comparable Solvay sites.
- Including the plants in the Group's reporting covering safety, the environment and employees' health, within two years following the acquisition.



Seven years' progress at the Devnya (Bulgaria) Solvay Sodi plant

The Devnya industrial complex, acquired in 1997 and coupled with a dedicated power station, has a capacity to produce 1.2 million tonnes a year of sodium carbonate. Stages in this process are:

- 2003: modernization of boilers, with dramatic reductions in emissions of nitrogen oxides (NO_x) and carbon monoxide;
- 2006: emissions of SO₂ reduced by 50% through changes in the type of coal used;
- 2006: the power station producing the energy needed on the site received a new operating license, indicating compliance with the EU's Integrated Pollution Prevention and Control (IPPC) Directive. This license requires monitoring of emissions into the air and releases into water, in compliance with the Directive, and continued upgrading of environmental performance to reach a level meeting the EU's Best Available Technique (BAT).
- 2002–2007: program for the protection of employees at their workstations, notably in respect of asbestos and Legionnaires' disease;
- 2008: further reductions in emissions of NO_x and CO₂ through installation of fluidized-bed combustion equipment;
- 2009: creation of a dedicated landfill facility, with recourse to the local dump for power-station ash ceasing.

The Group's safety standards have been implemented at the production facilities taken over from the Fournier pharmaceutical company (in France and Ireland) following acquisition of that company in 2005. This involved inclusion in the Group's programs, in the OHSAS 18001 audits, and in initiatives in the areas of ergonomics and accident monitoring. These activities have led to a very significant reduction in accidents (see figures).

At the Panoli site (in India, devoted to the production of specialty polymers), which was acquired in 2006, the action plan focussed on the health and safety of employees, and the environment. From the time of acquisition, safety results were included in the Group's overall reporting system, and a "risk engineering" audit, bringing together local managers and Group representatives, was conducted. There was already a formal policy and a continuous-improvement process operating on the site, and it merely had to give increased emphasis to the management of chemical hazards and to safety during maintenance. An in-depth diagnosis of environmental performance led to improvement of the biological treatment plant and addition of a very modern unit that will make it possible to treat the water influents from production of polyether-ether-ketone (now planned), and to comply with standards for the water receiving the effluent.

At Devnya (in Bulgaria), the production of soda ash has been brought up to standard, with an IPPC operating license obtained. The two units – for energy production and the soda art plant – forming the industrial complex can expect, very soon, to reach the level of environmental performance specified as European Best Available Technique (BAT) ■

Targets for 2012

- Continuing to bring the acquired sites within the scope of Solvay standards.
- Applying this policy when developing activities in countries with stronger growth, in the framework of the Group's geographical expansion strategy.

