

Provision was made in the Kyoto Protocol for the registration of Clean Development Mechanism (CDM) projects, which allow participants in developing countries to generate Certified Emissions Reductions (CERs) by lowering their emission levels of greenhouse gases. CERs can then be sold to those entities that are under an obligation to reduce greenhouse gases but are unable to achieve the required reduction.

AEL has registered two CDM projects with the United Nations Framework Convention on Climate Change (UNFCCC). These are for the No. 9 and No. 11 nitric acid plants, and they were registered in November 2007 and February 2008 respectively. The projects involve the installation of secondary catalysts in the ammonia burners of the plants, below the primary gauze catalyst. This secondary catalyst decomposes the residual nitrous oxide without affecting the production of nitric acid.

The secondary catalyst in the No. 9 plant was installed in November 2007 but had to be removed in June 2008 when the method of installation caused the primary catalyst to fail on two occasions. AEL is currently exploring various alternatives to rectify this situation.

The project on the No. 11 nitric acid plant has been far more successful. The secondary catalyst was installed in September 2007 and has reduced nitrous oxide emissions consistently by 80 per cent. This plant has a production capacity about 2,5 times that of the No. 9 plant, meaning that the effect of the secondary catalyst on total emission levels is far greater than could be achieved on the smaller plant.

In 2008, these projects reduced the emissions of greenhouse gases from the nitric acid plants by the equivalent of 239 000 tons of CO<sub>2</sub>. To put this in perspective, the reduction is significantly greater than the AEL Group's total CO<sub>2</sub> emissions of 153 000 tons in 2008.

## Land remediation

The guiding principles underlying AEL's remediation activities are to protect human health and the environment; to use good science, proven concepts, and best available techniques not entailing excessive cost; and to work with regulatory authorities and share information with interested and affected parties.

A risk-based approach guides the remediation process and human health and environmental risk assessments are undertaken at appropriate stages in individual projects. These assessments influence subsequent activities.

Annual reviews of the Group's environmental liability have been conducted by independent consultants since 1995 and the level of detail increases each year. The reviews are a reasonable approach to quantifying the potential future liability that has resulted from past operations. It is assumed that good management and operating practices at current operating sites will reduce remediation requirements over time.

Liability review findings are used to plan detailed remediation projects and to motivate Group companies to initiate necessary remediation and environmental management activities. At end-2008, the environmental liability for the Group was estimated at R146 million for remediation.

## Responsible Care\*

Responsible Care\* is the global chemical industry's voluntary initiative for continuous improvement of performance in safety, health and environmental practices. It is a public commitment to responsible management and stewardship of products and services throughout the lifecycle of products. It is also the vehicle used by the industry in its pursuit of improved performance in the areas of safety, health, the environment and product stewardship.

Responsible Care\* was launched by the Canadian Chemical Producers' Association in 1984 and has now been adopted in 53 countries. The Chemical and Allied Industries' Association is the custodian of Responsible Care\* in South Africa. In line with the guidelines of the International Council of Chemical Associations, the South African programme is based on eight fundamentals:

1. a formal commitment by each member company to a set of guiding principles;
2. a series of codes, guidance notes and checklists to help companies fulfill their commitment;
3. the development of indicators against which improvements in performance can be measured;

4. open communication on safety, health and environmental matters with interested parties, both inside and outside the industry;
5. opportunities for companies to share views and exchange experiences on implementing Responsible Care\*;
6. consideration of how best to encourage all member companies to commit themselves to, and participate in, Responsible Care\*;
7. a title and logo which clearly identify national programmes as being consistent with, and part of, the Responsible Care\* concept; and
8. procedures for verifying that member companies have implemented the measurable or practical elements of Responsible Care\*.

In South Africa, signatories have their compliance with the management practice standards verified by third party auditors. The following AECI subsidiaries have been audited successfully against these standards:

- AEL (Modderfontein operations)
- Akulu Marchon
- Chemfit
- Chemical Initiatives
- Chemiphos
- Chemserve Perlite
- Chemserve Systems
- Duco Speciality Coatings
- Dussek Campbell
- Heartland Leasing (Umbogintwini operations)
- ImproChem
- Lake International Technologies
- Resitec
- Senmin
- Specialty Minerals SA

## Looking to the future

The challenges faced by companies in the SHE arena do not normally change dramatically from year to year. AECI's management continues to be concerned by two primary issues arising from the context in which most of the Group's companies operate:

- a serious skills shortage, impacting on the Company's ability to staff operations with personnel who have the necessary aptitude, training and experience. The effect of this is felt particularly at supervisory and middle management levels; and
- a culture of risk-taking, impacting on the level of care that employees take in the course of their employment not to cause harm or injury to themselves, to others or to the environment.

The causes underlying this culture are numerous, but two major contributing factors are the inordinately high level of violent crime with which employees in South Africa have to co-exist, and a degree of fatalism arising from the high levels of untreated HIV-infection in the community.

Further training in the area of process safety will continue to be made available throughout the Group, as this is still seen as a weak area in AECI's SHE efforts.

The bulk of AECI's environmental legacy remediation spend is now complete and work in 2009 will focus mainly on monitoring.

It has been pleasing to report the improved performance of AECI in the areas of safety, health and the environment. The challenge now is not only to maintain this improvement but to better it in future years.

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