

Alternative

uses for 96% of residuals

Stora Enso strives to use raw materials as efficiently as possible in production, and to reduce the amount of waste by finding beneficial uses for residual materials.



Ash from recovery boilers can be used to improve soils.

Residuals mainly originate from pulp and paper processes, effluent treatment, energy production and chemical recovery. Mills regularly share their best practices through regional networks, facilitated by the Environmental Technology Team within the Paper product area's R&D group, and by Stora Enso Environment.

In 2004 the waste utilisation rate, expressed as the percentage of residuals being used for beneficial purposes, such as energy recovery and soil improvement, remained stable at 96%.

Less solid waste going to landfills

In 2004, Stora Enso approved a Group-level target to reduce the disposal of waste to landfill by 10% per unit production of pulp, paper and board by the end of 2009 from 2004 levels. Some mills have their own additional waste reduction targets. The Group-level target to reduce waste to landfill will primarily be achieved through increased raw material efficiency in the mills, and by identifying new opportunities to beneficially reuse the types of waste that currently go to landfill.

Stora Enso mills have implemented several new beneficial use projects for residuals during 2004:

- **Berghuizer Mill** has started to have some of its paper residues processed by CEDEM, a company founded by four Dutch papermaking companies to develop a sustainable method for processing residues. The resulting inorganic residuals are used in various civil engineering applications including road construction and cement improvement.

- During 2004 **Veitsiluoto Mill** started to deliver fly ash to Outokumpu Oyj's Kemi chrome mine, where it is used as a hardener during the hydraulic backfilling of mine cavities.
- **Whiting Mill** has begun to send woodyard scrapings (wood, bark, sand, grit and rock mixture) to an outside vendor for screening and recycling. These residuals had previously been beneficially used for internal road and dike construction at the Water Renewal Center landfill, but the need for such material in landfill construction has decreased since the amounts of waste being sent to the landfill have fallen significantly.
- **Wisconsin Rapids Pulp Mill** has begun to use bottom ash more widely for road construction. The material was previously landfilled or used in the construction of roads at the Water Quality Center landfill.

Landfill management

Stora Enso's pulp, paper or board mills have 24 active landfill sites of their own, including nine in Finland, seven in Sweden, four in the USA, one in Canada, one in China, one in France and one in Portugal.

The EU Landfill Directive sets new requirements for industrial landfills. While some of Stora Enso's European landfills already meet these requirements, other mills have taken steps to comply with the upcoming regulation.

In Portugal, for example, one section of **Celbi Mill's** landfill currently does not meet the requirements of the directive. A detailed adaptation plan has been made for the landfill site, involving the

removal of organic waste and the sealing of the site, and the plan has been submitted for approval to the relevant national authority.

In Finland and Sweden, several mills are currently finding ways to utilise residuals as covering material for landfills, making it possible to meet the requirements of the directive.

Minimising hazardous waste

The definitions for hazardous waste used within the Stora Enso Group are country-specific, and are listed by the regulatory agencies in each country or state. Hazardous wastes from Stora Enso units may comprise such materials as used oils, paints, solvents, laboratory waste and batteries.

In 2004, Stora Enso generated 11 609 tonnes of hazardous waste, an increase from 4 055 tonnes in 2003. This increase was largely due to contaminated soil from **Uimaharju Sawmill** that was delivered to a hazardous waste landfill.

Depending on their specific properties, hazardous wastes may either be burned for energy recovery, or handled by licensed companies who can safely recycle them, or dispose of them at licensed hazardous waste facilities or incinerators.

Improvements to **Whiting Mill's** machine parts cleaning procedures are expected to reduce the amounts of hazardous waste generated by 2 tonnes or 70% per year.



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