



# Case Study

## Co-processing Waste Materials in Cement Production

### Integrated Waste Management Concept

#### The Costa Rica Example

##### BACKGROUND

In Costa Rica industry is responsible for its own waste management. The common waste disposal method is landfilling. The infrastructure is suitable for the disposal of municipal waste but not designed for hazardous wastes. Industrial waste is collected from private companies and co-disposed with municipal waste due to lack of alternatives. At present the only permitted way to dispose of hazardous waste in an environmental sound manner is to export it to industrial countries.

- used solvents (halogen free)
- waste oil
- waste tires and rubber scrap
- plastics (except PVC) including empty and washed pesticide containers.

Those materials are either obtained directly from the waste producing industry or from the public sector. Some waste categories, like the waste tires or the pesticide containers, are also collected through environmental and health programs. Randomly disposed waste tires provide breeding areas for dengue transmitting mosquitoes. The illegal and unsound disposal of pesticide-contaminated containers causes harmful environmental impacts.

##### PROCESS

To improve the waste management system in the district of Cartago, an integrated waste management concept has been elaborated with a clear distribution of responsibilities between the public (responsible for municipal waste) and the private sector (in charge of industrial waste). For both waste fractions, programs for waste reduction (cleaner production), recycling and sound disposal have been initiated. In this context co-processing is first of all a process for the industry but could also be considered as a solution for those leftovers which can't be reused anymore or are unsuitable for the disposal at the sanitary landfill. In 2004 Holcim Costa Rica S.A. put a new state-of-the-art cement kiln into operation with auxiliary monitoring and filtering equipment. The facility fulfils the requirements for co-processing waste material. The permit allows for disposing of four types of waste:

##### LEGAL FRAMEWORK

Co-processing of waste material in cement kilns was not regulated by national legislation. Holcim Costa Rica S.A. proved with test burns the ability of an environmentally sound handling and disposal of waste material in the new cement kiln. In a joint effort between the cement manufacturers and the ministry of health, a regulation was implemented that permits the co-processing of the above mentioned waste materials for the national regulation on co-processing are international applied standards.





### GOOD PRACTICE

Co-processing at Holcim Costa Rica SA involves high-quality work throughout the supply chain. Controlling and monitoring mechanisms minimize the risk that supplementary toxic substances are emitted from the waste treatment activity. The waste products are obtained directly from the generating industry. The service disposal solution is covered by individual contracts, depending on the waste material and the required transportation. The waste oil is collected from the garages by some major lubricant manufacturers within their sales activities, and then delivered to Holcim. The direct contact to the customers guarantees that the pre-processing activities are carried out according to the regulations.

### FURTHER DEVELOPMENT

The existing national regulation restricts the use of the cement kiln to the disposal of waste fractions with a significant calorific value only. But there is a need of solutions to treat toxic wastes like obsolete pesticides or persistent organic pollutants (e.g. DDT or PCB).

Holcim Costa Rica S.A., as other stakeholders from the public and private sector are contributing in a disconcerted effort to the elaboration of a new waste disposal law that would introduce mechanisms to minimize the waste streams, and to require the soundest way of disposal, which in some cases is co-processing.

Other activities include the classification and quantification of the waste generated by the national industry to estimate the future potential for co-processing. Holcim Costa Rica S.A also applied for an increase in the types of waste permitted for co-processing.

### LESSONS LEARNT.

Co-processing was seen as waste incineration with harmful impacts on health and the environment.

With the communication policy of Holcim S.A. Costa Rica and activities to promote co-processing in the country (e.g. participation on the national program to combat dengue fever) co-processing is now recognized as a valuable waste treatment alternative. A close and professional cooperation between the ministry of health, the local government of Cartago, and Holcim Costa Rica S.A: allowed for the integration of co-processing into a regional waste management concept. This ensured a quick start-up of local co-processing activities and, it is hoped, over the long term the incorporation of co-processing into the national waste strategy.

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### REFERENCES

[www.coprocem.com](http://www.coprocem.com)