Ban the Burn index

Types of Incineration

Incineration of waste results in output of waste products.
Quite simply: garbage in = garbage out

More info

Incineration Database
Specific information on types of incinerators

Municipal Incinerators

Municipal waste incineration is the still the number one dioxin source, according to a 1999 UNEP study. In many countries over the past few years, older incinerators have been updated and new incinerators have been built using improved technologies for air pollution control. This has led to substantial reduction of emissions of toxic substances to air.

Although this is an improvement, the problem of toxic waste products from incineration has not disappeared. In fact, the problem has shifted so that more dioxins and other toxic substances now appear in the ashes therefore creating new disposal and pollution problems.

Studies in Europe have reported that emission measurements from some European incinerators fall within the new proposed EC limit of 0.1 ng I-TEQ/m3 , but others exceed this limit.

Industrial / Hazardous waste incineration

Only a few studies have been published in the scientific literature on recent emission testing of industrial incinerators.

In Japan, a study performed point measurements on nine industrial waste incinerators (Yamamura et al. 1999). Dioxin emissions were below 0.1 ng I-TEQ/Nm3 for two of the incinerators and above this level (0.13 to 4.2 ng I-TEQ/Nm3) for the remaining six.

In the US, one study reported on dioxin emissions of mobile soil burning incinerators (Meeter et al. 1997). On-site remediation of contaminated soils at hazardous waste sites by such incinerators is employed where sites contain compounds that are difficult to destroy. Data collected primarily from trial burns of 16 incinerators showed that 10 of the incinerators failed to meet the proposed EPA standard of 0.2 ng TEQ /dscm. The authors commented that a significant fraction of soil burning incinerators could have problems meeting the proposed future EPA limit.

Medical Waste - useful waste into hazardous waste.

Only 10 percent or less of a typical hospital's waste stream is potentially infectious, and that can be sterilised with heat, microwaves and other non-burn disinfection technologies. The remaining waste is not infectious. Most paper, plastic food waste and other hospital waste are similar to the same waste coming from hotels, offices or restaurants, since hospitals serve all of these functions. By burning medical waste in an incinerator the basic biological problem of disinfecting infectious material - which can be dealt with by various technologies - becomes a formidable chemical pollution problem that is costly to manage and difficult to contain.

Waste to energy schemes

The generation of energy from waste has increased recently and in fact is used extensively by governments and industry to "green" incineration and make it more acceptable to the general public. But all of the negative impacts from incineration do also apply to "waste to energy" facilities. Moreover, the energy used to produce the product will get lost anyway and only a fraction of the intrinsic energy content of the materials will be recovered. Reuse and recycling are also from energy perspective preferred options.

Municipal solid waste can be directly combusted in waste-to-energy incinerators or it can be processed as refuse-derived fuel (RDF) before incineration (or combustion in e.g. powerplants); or it can be gasified using pyrolysis or thermal gasification techniques.

Another MSW-to-electricity technology, landfill gas recovery, permits electricity production from existing landfills via the natural degradation of MSW by anaerobic fermentation (digestion) into landfill gas. Anaerobic digestion can also be used on municipal sewage sludge.

Refuse-derived fuel (RDF)

Refuse-derived fuel (RDF) typically consists of pelletized or fluff MSW that remains after the removal of non-combustible materials such as ferrous materials, glass, grit, and other materials that are not combustible. The remaining material is then sold as RDF and used in dedicated RDF boilers or co-incinerated with coal or oil in a multi-fuel boiler.

The environmental concerns of incineration also apply to RDF combustion facilities.

Pyrolysis / Thermal Gasification

Pyrolysis and thermal gasification are related technologies. Pyrolysis is the thermal decomposition of organic material at elevated temperatures in the absence of gases such as air or oxygen. The process, which requires heat, produces a mixture of combustible gases (primarily methane, complex hydrocarbons, hydrogen and carbon monoxide), liquids and solid residues. Thermal gasification of MSW is different from pyrolysis in that the thermal decomposition takes place in the presence of a limited amount of oxygen or air. The produced gas that is generated can then be used in either boilers or cleaned up and used in combustion turbine/generators. Both of these technologies are in the development stage with a limited number of units in operation. Most of the environmental concerns for incineration also apply to pyrolysis and thermal gasification facilities.

Cement Kilns

Throughout the world some 60 cement kilns have been modified so that various wastes can be burned along with conventional fuels. But cement kilns are designed to make cement and not to dispose of waste. According to a study by the US Center for the Biology of Natural Systems, emissions of dioxins are eight times higher from cement kilns burning hazardous waste, than from those that do not burn it.