PCB Destruction Technologies

FACT SHEET

Technologies to destroy PCB wastes effectively and safely are currently available and in use in many countries. These include incineration and chemical treatment.

What are the advantages of incineration?

Current incineration technology can destroy a minimum of 99.9999 percent of PCBs. This technology has been extensively tested and is widely used in Europe and the United States.

PCB incineration can destroy large quantities of high level contaminated liquids or low level contaminated oils and solids such as shredded transformers. Incinerators may be either permanently installed (such as the one now operating in Swan Hills, Alberta) or built as transportable or mobile facilities.

Are there any other methods of destroying PCBs?

Chemical processes to destroy PCBs are proven technologies and are used extensively in a number of provinces. However, this technology is used to destroy lower concentrations of PCBs in contaminated oils which can then be re-used. Biological treatment is still at an early stage of development and is not commercially available.

What are the advantages of a mobile PCB incinerator?

A major advantage of mobile incinerators is that they can be temporarily moved to a location where wastes must be destroyed and can then be moved to another site. Mobile incinerators are transported from site to site in tractor trailer trucks, and can be set up, tested and ready for operation in anywhere from two to six weeks, depending on their size. These units are extensively used in the United States to clean up contaminated waste sites.

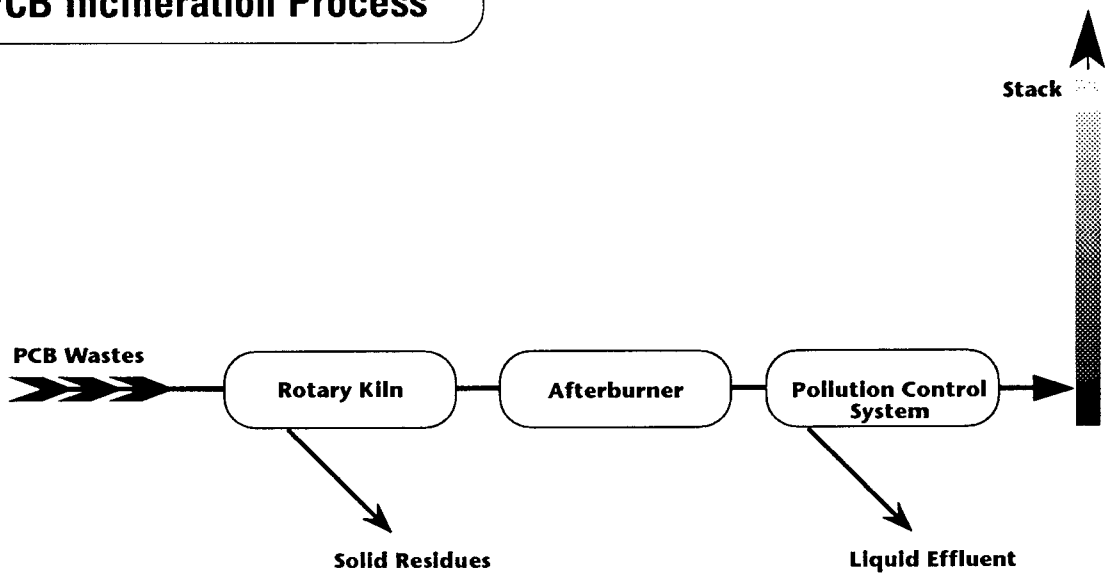
The different models of mobile PCB incinerators available vary primarily in their capacity, destroying from 1 to 10 tonnes per hour.

How does a mobile PCB incinerator work?

PCB destruction is not a complex process. Complete combustion must occur and the resulting gases must then be cleared to ensure minimal emission of pollutants. Mobile PCB incinerators are designed to convert PCB wastes to non-toxic ash and the normal products of fuel combustion — carbon dioxide and water vapour. The following diagram and explanation describes the rotary kiln incinerator used to do this.

OVER

The PCB Incineration Process



Incineration

The first of two incineration steps typically occurs in a kiln which burns the solid or liquid wastes at 900 degrees Celsius and produces both solid and gaseous wastes. The solids are removed and tested before disposal. In the second step, gases and airborne particles are drawn into an afterburner. Here, the gases are burned at 1200 degrees Celsius (2190° F) for a minimum of 2 seconds.

Pollution Control

Remaining gases then pass through an extensive pollution control system to ensure that harmful by-products are not released. The system consists of a series of gas cleaning steps which remove pollutants so that air emissions are almost at a non-detectable level.

Monitoring

The operation of the system is controlled by monitoring the concentration of specific combustion products. If recommended values are exceeded, the unit is automatically shut down.

Waste Disposal

Because the wastes are non-toxic, disposal is straightforward. The non-toxic solid wastes can be disposed of in an engineered landfill site; the acidic liquid wastes are neutralized before disposal. The site on which the incineration takes place can then be returned to use