

## CALCIUM (Alkaline) OXIDE – Process Description

The Calcium Oxide Process employs a high pH environment to disinfect/sterilise pathogenic organisms by permanent disruption of membranes/capsids, and biochemical activity.

The treated waste need not be disposed of immediately post-treatment as it is still killing organisms past 10 log places. The disinfecting chemical is neutralised over time (turning into calcium carbonate), is preconditioned for landfill disposal and does not become a groundwater pollutant.

Regulated medical waste enters the treatment site in secure bins which are manually moved into position, where they are automatically raised and emptied of their contents into the receive hopper. This is done on a frequent enough basis to make the Calcium Oxide process continuous in its operation.

Calcium oxide or quicklime is added to the shredded waste admixture and mechanically homogenised. Typically, a pH great than 13 is initially in the waste, the treated waste generally exits the machine with a pH ranging from 10 to 12 units and is deposited into sealed containers.

The basic steps are summarised sequentially as follows:

- Regulated medical waste is continuously shredded in a closed vessel with a HEPA filtered negative air pressure
- The shredding process is continuously doused with an alkaline recycle solution for initial disinfection and aerosol control.
- The waste is conveyed to a Rotary mixer where calcium oxide and make-up water is added. Mixing takes 6 minutes and the temperature of the waste increases from the heat of solution of the calcium oxide.
- The treated waste is conveyed to a mechanical press where the excess fluid is removed and returned to the shredder and the mixer via a balance tank and fluid filter.
- The product is compressed into a large sealed bin for disposal. It is now biologically inert and starting to become chemically inert.