

CIIC, Chemical Reduction Technology

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Clean Technologies International Corporation has developed a patented Chemical Reduction Waste Treatment Process, which utilizes a proprietary liquid reactant metal alloy bath composed primarily of mixtures of natural highly chemically reactive aluminum, magnesium, and lithium, along with specific alloys of other alkaline metals. These chemically reactive reducing alkaline metal alloys molecularly decompose complex organic chemicals, and all halogenated hydrocarbons, including PCBs, while capturing in the liquid bath all metals. This includes all radioactive isotopes contained within the waste materials introduced into this chemical reduction medium. Clean Technologies International Corporation's patented chemical reduction waste treatment process will be utilized to meet the objectives of the DOD and the DOE in the treatment of all types of waste. Chemical reduction, as a method of processing waste, does not produce any EPA or RCRA listed effluents or by-products in off-gas emissions. This non-incineration thermal chemical waste treatment off-gas air emissions analysis has earned an exemption from Title Five of the Clean Air Act. The Air Quality Bureau of the New Mexico Environmental Department granted this exemption. This exemption is a lifetime exemption. By design, dioxins and furans are not produced in the off-gas air emissions. This is realized by the formation chemistry necessary to produce both of the toxic compounds. To reform, both toxic compounds require oxygen and chlorine atoms in high temperature off-gases. Clean Technologies' chemical reduction waste treatment process operates in an anaerobic environment, at water-cooled lower temperatures, and with less than 5% oxygen. All chlorine atoms are chemically converted into aluminum chloride salts by chemical synthesis. This chemical reduction waste treatment process will be utilized for the decontamination/destruction technology demonstration for the removal of organics in transuranic waste. These treatment concepts meet the stated objectives for the treatment of all mixed waste. All organic materials, including all halogenated hydrocarbon compounds, will be chemically processed, removed, and separated from the transuranic metals. The alloyed transuranic metals will be placed into metal ingots, which are good for long-term storage. The chemically reduced pure metals can be reclaimed from the ingots if needed. The removal of organics from radioactive metals eliminates the production of hydrogen gas during shipment and storage. Radiolysis cannot occur without organic materials.