rulemaking. See also the docket for today's proposal for more data on constituent concentrations in untreated and treated K088. EPA is specifically requesting comment on regulating the phthalates: bis (2-ethylhexyl) phthalate, di-n-butyl phthalate and di-n-octyl phthalate. These constituents can show up in the untreated potliner and the treated residue; however, there is some question that their presence may simply be due to lab contamination.

Treatment technologies for K088 are also designed to recover or stabilize the fluoride. Therefore, EPA is proposing to regulate fluoride in K088 in order to ensure that the fluoride is actually recovered or that it is properly treated. Fluoride is also being regulated because of its toxicity and the high concentrations found in untreated K088 (see Tables 2 and 3 in 56 FR 33004 (July 19, 1991)-the proposed delisting of K088 generated by Reynolds Aluminum Company). If a treatment standard is promulgated for fluoride, the Agency will add fluoride to the UTS for K088. EPA has some data on the toxicity of fluoride (see the docket for today's proposed rule), and is in the process of gathering more information. For more information on regulated constituents see the Best Demonstrated Available Technology Background Document (BDAT) for Newly Listed or Identified Wastes for K088, Spent Aluminum Potliners found in the docket to this rule.

Section 3004(d)(1), (e)(1), and (g)(5) require that land disposal of hazardous wastes is prohibited unless a prohibition is no longer warranted to protect human health and the environment. EPA reads this language to require that land disposal may still be prohibited after treatment of hazardous constituents if the waste might still pose substantial hazards due to presence of other constituents or properties. 56 FR at 41168 (August 19, 1991); NRDC v EPA, 907 F. 2d 1146, 1171-72 (D.C. Cir. 1990) (dissenting opinion). These hazards could be posed due to lack of treatment of other constituents in the waste, in this case, fluoride. It should be noted that this action is consistent with previous Agency actions, since EPA regulated fluoride in the delisting granted to treatment residues from the Reynolds Metals treatment process, and also regulates discharge of fluorides in the CWA effluent limitation guidelines for the primary aluminum subcategory. Consequently, the Agency is proposing a treatment standard for fluoride to assure that ultimate disposal of treated K088 is protective.

EPA is proposing treatment standards for fluoride, as well as the hazardous

constituents contained in the waste. Flouride is present in these wastes in very high concentrations: upwards of 10%. Untreated concentrations of this magnitude can cause significant adverse effects to human health and the environment if improperly land disposed. The Agency requests comment on whether fluoride should be added to Appendix VIII, as well.

 b. Specific Companies Investigating K088 Recovery/Treatment Technologies. It has been mentioned earlier that there are numerous technologies either available or being developed that recycle or recover the value (carbon, fluoride, etc.) in K088. Some of these technologies are described below. This is by no means a comprehensive discussion on those technologies, but rather is intended to give the public some idea of treatment options that are, or may be, available. These technologies or companies are only those of which the Agency has been made aware. EPA has placed in the RCRA Docket of this proposed rule all the recycling/ treatment studies, as well as literature and videos submitted to the Agency on the various technologies. The EPA requests comment and data on these technologies and any other recycling or recovery technologies applicable to K088.

 Enviroscience, Inc. (ESI) has completed a pilot plant demonstration sponsored by Kaiser Aluminum, Vanalco and Columbia Falls Aluminum Company. Their process uses K088, K061 (electric arc furnace dust) and F006 (electroplating sludges) to produce zinc oxide, mineral wool fiber and pig iron. The K088 is first formed into briquettes and then heated to approximately 3000 F in a furnace, with lime and silica being added to attain an optimal acid:base ratio for proper fiber formation. The carbon and the cyanide from the potliner are used to reduce the metals in the K061 and F006. The nonreducible metal oxides are spun into a mineral wool from the molten slag.

• Alcan International Limited has developed a Low Caustic Leach and Liming hydrometallurgical process to treat K088. This process converts the fluorides to acid grade fluorspar and recovers the sodium and aluminum as sodium aluminate and caustic feed to be used in aluminum smelter operations. Alcan claims that the remaining brick and carbon fraction constitutes a high ash solid fuel whose reduced sodium content enhances its value as a chemical reducing agent.

• Ormet Corporation has used a pilotscale melting system vitrification process to treat K088 wastes. The process involves the rapid suspension heating of the waste and other additives in a preheater prior to physical and chemical melting which occur within a cyclone reactor. Ormet has submitted a petition to the EPA requesting a delisting of their residues from this process. They intend to scale-up this plant upon receiving a delisting of their waste. They claim the process produces a nonhazardous reusable product with the qualities of industrial glass that can be used as glass insulation material, roofing shingle granules or in the manufacture of tiles.

• Comalco Aluminum Ltd. (CAL), an Australian company, has developed the Comtor process, which is a full-scale calcination process which thermally destroys the cyanide in K088. This process also recovers the fluoride and carbon values in K088 by using hydrometallurgical techniques with lime dewatering. The precipitate can be used as a fluxing agent or in cement making. The caustic liquor may be recycled to the alumina plant or can be used as a scrubbing agent. Comalco has plans to upgrade their plant to 10,000 ton/yr and build a second plant in New Zealand. They have a licensing agreement with Aisco Systems of Canada to commercialize the technology

• Elkem Technology is a Norwegian company which has done bench-scale testing consisting of smelting K088 along with iron ore to produce pig iron and a slag which they hope to get delisted. The process uses the carbon in K088 to act as a reducing agent and destroy the cyanides and other toxic organics, while rendering all other constituents immobile in a glassified, inert slag. For each ton of K088, they produce 0.85 ton of iron. Elkem plans a demonstration plant in the U.S. next year. They also plan to pilot a process to recover fluoride from the molten slag.

• Ausmelt Limited is an Australian company which has performed pilot scale tests using their submerged lance technology, which is a pyrometallurgical process, to destroy the toxic constituents in K088 and produce a stable slag. Fluorides are recovered for re-use in the aluminum smelting process. Ausmelt has plans to build a facility which could process approximately 15,000 tons per year of K088.

For more specific information on these technologies, see the Best Demonstrated Available Technology Background Document (BDAT) for Newly Listed or Identified Wastes for K088, Spent Aluminum Potliners.

For the treatment standards being proposed today for K088, see § 268.40 table— Treatment Standards for