estimates and, on occasion, has requested a petitioner to re evaluate the estimated waste generation rate. EPA accepts DOE's certified estimate of 19 million gallons per year (approximately 95,000 cubic yards) of ETF effluents to be generated at its Hanford facility.

EPA does not generally verify submitted test data before proposing delisting decisions. The sworn affidavit submitted with this petition binds the petitioner to present truthful and accurate results. The Agency, however, has maintained a spot-check sampling and analysis program to verify the representative nature of the data for some percentage of the submitted petitions. A spot-check visit to a selected facility may be initiated before finalizing a delisting petition or after granting an exclusion.

C. Agency Evaluation

Review of this petition included consideration of the original listing criteria as well as the additional factors required by the Hazardous and Solid Waste Amendments (HSWA) of 1984. See Section 222 of HSWA, 42 U.S.C. 6921(f), and 260.22(d)(2)-(4).

The Agency considers characterization information and data for the untreated liquid waste to be sufficient to evaluate the potential constituents of concern in the untreated wastes. The Agency believes that DOE's inventory of chemicals used in production plants and supporting operations provides an understanding of the hazardous constituents that are potentially present in the DSTs. In addition, the Agency believes that the analytical data characterizing the untreated 242-A Evaporator PC represents the types of liquid waste that will be treated in the ETF. Furthermore, the Agency believes that DOE has conducted sufficient studies of its pilotscale treatment processes to demonstrate that the system, once online, will be able to treat dilute aqueous wastes containing hazardous constituents of concern to levels below the level of concern for human health and the environment.

The results of the treatability studies were used by DOE to estimate maximum concentrations of hazardous constituents in the untreated wastes once treated by the ETF. The data from this evaluation clearly demonstrated that the ETF would have the capability of treating hazardous constituents in the PC to below delisting levels.

DOE estimated the maximum concentrations of hazardous constituents that can be treated by the ETF based on one pass of the STSs (waste waters) through the ETF. (If necessary, the ETF design provides for recycle of the treated waters.) The maximum concentrations of constituents that the ETF is capable of treating are also low. This is because many inorganic constituents were treated to below detection limits by the RO process so that the ability of the IX to remove inorganic constituents was not considered. In addition, the ability of RO and IX processes to further remove organic constituents after the UV/OX process was not considered.

The treatment data showed ETF to be extremely effective for all classes of inorganic species (i.e., monovalent and divalent cations and anions). Furthermore, the levels of inorganic constituents in the PC are expected to be relatively low in any case because it is a condensate derived from an evaporation process. The non-volatile inorganic metals are not expected from such a waste generating process. The existing PC data confirms that only trace levels of the non-volatile metals are present, while salts generated from dissolved ammonia are present at levels above 500 ppm. Because removal efficiencies for ammonia in the treatment studies were demonstrated to be 99-100%, this indicates that ETF should be able to effectively remove any inorganic constituents of concern in the PC

The treatability studies also demonstrated that organic constituents can be effectively treated by the UV/OX process. In the UV/OX process, the oxidation (destruction) of organic constituents was shown to follow first order kinetics. This means that the organic constituent concentration decreased logarithmically with time. Under the conditions used for the process (large excess of oxidant), the rate of destruction typically will not depend on the concentration of the constituent.

The constituent concentrations in the STSs were varied to span the concentrations of constituents observed in the PC and to evaluate the treatment capabilities of the ETF. STS-1 and STS-4 contained relatively high levels of organics in comparison to STS-2 and STS–3. The pilot-scale UV/OX unit was able to decrease the concentrations of most organic constituents by greater than 90 percent (long before testing times had expired). The organic compounds that were somewhat more difficult to destroy were the chlorinated compounds (i.e., hexachloroethane and 1,1,2-trichloroethane) contained in STS-4 and tridecane contained in STS-3 and STS-4.

STS-4 contained high concentrations of inorganic constituents and additional

organic constituents (which are not expected to be in the PC) representing various chemical groups. The organic constituents were generally the easier to oxidize compounds at a concentration of greater than 25 times the quantitation level (exception being the chlorinated compounds listed above and tridecane). The purpose of the organic constituents contained in STS–4 was to demonstrate the versatility of the ETF to treat a variety of constituents representing various chemical groups.

The testing of STSs performed with the UV/OX process was primarily designed to determine the oxidation rate for a wide range of organic groups. The testing was not intended to show 100 percent destruction of each of the organic constituents in the STSs. The destruction efficiency is a function of the oxidation rate and exposure time in the UV/OX unit. The exposure time for each of the STSs was based on the type of organic and inorganic constituents they contained and their respective concentrations. The exposure time in the UV/OX unit for STS-4 (5 minutes) was kept the shortest of the four STSs because the test solution generally did not contain the difficult to oxidize organic constituents. This exposure time did not prove to be sufficient for several organic compounds which were difficult to oxidize (i.e., the chlorinated compounds referred to above and tridecane). However, STS-1, which also contained relatively high levels of inorganics and organics (including difficult to oxidize chlorinated compounds similar to STS-4), demonstrated more complete oxidation of the organic constituents based on longer exposure time in the UV/OX unit (46 minutes).

The organic constituent levels in the STSs, particularly STS–1 and STS–4, are worst-case levels. In addition, most of the organic constituents in STS–4 have never been detected in the PC. The Agency believes that the ETF should be able to effectively remove the organic constituents found in the PC. If necessary, it is also possible to increase the amount of UV/OX exposure (and thus treatment) provided for organic compounds in the ETF by either recycling the treated PC or by reducing the flow rate through the UV/OX unit.

As discussed previously in this notice, the Agency is proposing to include monitoring and testing requirements in DOE's exclusion in order to ensure that the ETF is capable of treating dilute aqueous wastes such that concentrations of hazardous constituents are below delisting levels of concern. As part of these testing requirements, EPA established