are the proposed verification testing conditions of the exclusion.

The Agency encourages the use of upfront delisting petitions because they have the advantage of allowing the applicant to know what treatment levels for constituents will be sufficient to render specific wastes non-hazardous, before investing in new or modified waste treatment systems. Therefore, upfront delistings will allow new facilities to receive exclusions prior to generating wastes, which, without upfront exclusions, would unnecessarily have been considered hazardous. Upfront delistings for existing facilities can be processed concurrently during construction or permitting activities; therefore, new or modified treatment systems should be capable of producing wastes that are considered non-hazardous sooner than otherwise would be possible. At the same time, conditional testing requirements to verify that the delisting levels are achieved by the fully operational treatment systems will maintain the integrity of the delisting program and will ensure that only non-hazardous wastes are removed from Subtitle C control.

Finally, the Hazardous and Solid Waste Amendments of 1984 specifically require the Agency to provide notice and an opportunity for comment before granting or denying a final exclusion. Thus, a final decision will not be made until all public comments on today's proposal are addressed.

2. Overview of Treatment Process

DOE's proposed treatment process for 242–A Evaporator PC consists of ten primary steps which are: (1) pH adjustment, (2) coarse filtration, (3) ultraviolet/oxidation (UV/OX), (4) pH adjustment, (5) hydrogen peroxide destruction, (6) fine filtration, (7) degasification, (8) reverse osmosis (RO), (9) ion exchange (IX), and (10) pH adjustment. DOE believes that efficient removals can be achieved through the proposed ETF for the remediation of 242–A Evaporator PC, and other liquid waste streams.

DOE chose to perform 242–A Evaporator PC treatability studies using pilot-scale treatment equipment configured similarly to the ETF design. The pilot-scale treatability studies included ultraviolet/oxidation (UV/OX), reverse osmosis (RO), and ion exchange (IX) treatment steps in addition to several intermediate steps such as pH adjustment, hydrogen peroxide destruction, and fine filtration. In addition, since the 242–A Evaporator was not scheduled to be on-line until late 1993 or later, process condensate was not available for treatability studies in the pilot-scale treatment processes in sufficient time to meet the August 1993 delisting submittal deadline. Therefore, DOE developed four surrogate test solutions (STSs) to characterize 242–A Evaporator PC, as well as other liquid wastes generated at the facility. DOE developed these four surrogate test solutions (i.e., STS–1 through STS–4) to evaluate the treatment capabilities of the ETF, in particular, the UV oxidation rate of organic compounds, and the removal efficiency of inorganic compounds using reverse osmosis and ion exchange. The STS constituents were selected from the 242–A Evaporator PC characterization data (obtained from 34 samples taken between August 1985 and March 1989), a Hanford site chemical inventory, and additional organic compounds representing a variety of chemicals of regulatory concern. DOE believes that the 200 gallons of each batch of STS treated using the three main treatment processes (*i.e.*, UV/OX, RO, and IX) in sequential steps provides pilot study capabilities with minimal infield scale-up issues. DOE's proposed full-scale ETF is designed to allow treatment of a wide range of constituents, in addition to those potentially present in the 242–A Evaporator PC.

B. Agency Analysis

DOE provided information quantifying concentrations of hazardous constituents in 34 samples of untreated process condensate effluent collected between August 1985 and March 1989. These samples were analyzed for metals and other inorganic constituents, organic constituents, and radioactive constituents. DOE used Methods SW–846 6010 to quantify concentrations of the TC metals and other inorganic constituents. DOE used Methods 8240 and 8270 to quantify concentrations of the volatile and semi-volatile organic constituents, and Method 9010 to quantify the total constituent concentrations of cyanide in the 242–A Evaporator PC. Radioactive constituents were analyzed using Method 9310. Table 1 presents 90th percentile upper confidence limit (90%CI) and maximum concentrations of hazardous constituents of concern detected in the 34 samples of 242–A Evaporator PC collected between August 1985 and March 1989.

Table 1 includes all hazardous constituents (listed in App. VIII, § 261) found in the condensate, as well as other detected constituents of concern that have health-based levels. Other constituents detected without health-based levels included inorganic salts (e.g., sodium, calcium) and organic compounds (e.g., alcohols, hydrocarbons, glycols) of relatively low toxicity. (See the public docket for this notice for a summary of constituents detected and health-based levels.)

TABLE 1.—HAZARDOUS CONSTITUENTS OF CONCERN DETECTED IN UNTREATED 242–A EVAPORATOR PC (PPM)

Parameter	Constituent concentrations	
	90% CI	Maximum
Barium	0.0072	0.008
Cadmium	SD	0.005
Chromium	0.066	0.156
Fluoride	0.971	12.27
Mercury	0.0003	0.0007
Nickel	0.015	0.017
Vanadium	0.0067	0.007
Zinc	0.017	0.044
Acetone	1.0	5.1
Benzaldehyde	SD	0.023
Benzyl alcohol	0.014	0.018
1-Butanol	11.0	88.0
Chloroform	0.014	0.027
Methyl ethyl ketone	0.053	0.12
Methylene chloride*	0.14	0.18
Methyl isobutyl ketone	0.014	0.068
N-Nitrosodimethylamine	SD	0.057
Phenol	SD	0.033
Pyridine	SD	0.55
1,1,1-Trichloroethane*	SD	0.005

SD Denotes a single detect.
*Constituent confirmed to be in blank samples only.

For the ETF treatability studies, DOE used SW–846 methods 8015 and 8240 for analysis of STS protocol characterization samples, with one exception. The semivolatile organic compound analysis was performed using a Contract Laboratory Program (CLP) analysis method, a method similar to SW–846 Method 8270. DOE used SW–846 Method 9010 to quantify the total constituent concentrations of cyanide in samples of the untreated and treated STSs.

Tables 2 through 5 present concentrations of inorganic and organic compounds in samples of untreated and treated STS–1 through STS–4 and percent removals. Nearly all of the 29 inorganic constituents were treated to below their detection levels based on the inorganic data for the STSs from the IX process; only inorganic constituents above detection limits are included in the tables. Treated values for organic constituents are based on the organic data for the STSs from the UV/OX process only. To fully illustrate the capabilities of the UV/OX system, all meaningful data for organic constituents are given in the tables.