DOE/RL-88-21
1706-KE Waste Treatment System
Rev. 3, 9/26/96

Please print or type in the unshaded areas only
*(fill-in areas are spaced for elite type, i.e. 12 character/inch)* .

| FORM 3 | DANGEROUS WASTE PERMIT APPLICATION | I. EPA/STATE I.D. NUMBER WA789000896 7 |
|---|---|---|

FOR OFFICIAL USE ONLY

| APPLICATION APPROVED | DATE RECEIVED *(mo., day, & yr.)* | COMMENTS |
|---|---|---|
| | | **Pending Approval** |

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION (place an "X" below and provide the appropriate date)

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete Item below.)*

| MO. | DAY | YEAR |
|---|---|---|
| 03 | 22 | 1943 |

**FOR EXISTING FACILITIES, PROVIDE THE DATE (mo., day, & yr.) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)*
**The date construction of the Hanford Facility commenced.*

☐ 2. NEW FACILITY *(Complete item below)*

| MO. | DAY | YEAR |
|---|---|---|
| | | |

FOR NEW FACILITIES, PROVIDE THE DATE, *(mo., day, & yr.)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*
☒ 1. FACILITY HAS AN INTERIM STATUS PERMIT ☐ 2. FACILITY HAS A FINAL PERMIT

III. PROCESS - CODES AND CAPACITIES

*A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the (Section III-C).*

*B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.*

*1. AMOUNT - Enter the amount.*

*2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.*

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| Storage: | | |
| CONTAINER (barrel, drum, etc.) | S01 | GALLONS OR LITERS |
| TANK | S02 | GALLONS OR LITERS |
| WASTE PILE | S03 | CUBIC YARDS OR CUBIC METERS |
| SURFACE IMPOUNDMENT | S04 | GALLONS OR LITERS |
| Disposal: | | |
| INJECTION WELL | D80 | GALLONS OR LITERS |
| LANDFILL | D81 | ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER |
| LAND APPLICATION | D82 | ACRES OR HECTARES |
| OCEAN DISPOSAL | D83 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | D84 | GALLONS OR LITERS |

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| Treatment: | | |
| TANK | T01 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | T02 | GALLONS PER DAY OR LITERS PER DAY |
| INCINERATOR | T03 | TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR |
| OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided: Section III-C.) | T04 | GALLONS PER DAY OR LITERS PER DAY |

| UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE |
|---|---|---|---|---|---|
| GALLONS | G | LITERS PER DAY | V | ACRE-FEET | A |
| LITERS | L | TONS PER HOUR | D | HECTARE-METER | F |
| CUBIC YARDS | Y | METRIC TONS PER HOUR | W | ACRES | B |
| CUBIC METERS | C | GALLONS PER HOUR | E | HECTARES | Q |
| GALLONS PER DAY | U | LITERS PER HOUR | H | | |

*EXAMPLE FOR COMPLETING SECTION III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks; one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.*

| | A. PROCESS | B. PROCESS DESIGN CAPACITY | |
|---|---|---|---|

| LINE NUMBER | CODE *(from list above)* | 1. AMOUNT *(specify)* | 2. UNIT OF MEASURE *(enter code)* | FOR OFFICIAL USE ONLY | | | |
|---|---|---|---|---|---|---|---|
| *X-1* | *S02* | *600* | *G* | | | | |
| *X-2* | *T03* | *20* | *E* | | | | |
| 1 | S02 | 2,461 | L | | | | |
| 2 | T04 | 5,678 | V | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (CODE "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

S02, T04

The 1706-KE Waste Treatment System (1706-KE) intended to begin waste management operations in July of 1986. This unit was intended to treat mixed waste generated in the laboratories of the 1706-FE Building. The 1706-KE consisted of a 2,082-liter (550-gallon) waste accumulation tank, a 0.14-cubic meter (5-cubic foot) mixed-bed resin ion exchange column, a 114-liter (30-gallon) evaporator unit, and a 363-liter (96-gallon) condensate collection tank.

Waste generated in the 1706-KE Building was to have been transferred from the waste accumulation tank to the ion exchange column and then continuously recirculated to remove the ionic constituents from the waste stream. The waste would then have been transferred to the evaporator unit. The evaporator unit would have heated and boiled the liquid waste to stream. The steam would have been condensed and collected in the 363-liter (96-gallon) condensate collection tank with the exhaust from the evaporation unit being passed through a HEPA filter prior to discharge.

The 1706-KE never managed mixed waste and a procedural closure under interim status is being pursued. The maximum process design capacity for tank storage is 2,461 liters (650 gallons). The maximum process design capacity for tank treatment is 5,678 liters (1,500 gallons) per day.

IV. DESCRIPTION OF DANGEROUS WASTES

*A. DANGEROUS WASTE NUMBER - Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describe the characteristics and/or the toxic contaminants of those dangerous wastes.*

*B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.*

*C. UNIT OF MEASURE - For each quantity entered in column B enter the unit of measure code. Units of measuer which must be used and the appropriate codes are:*

| ENGLISH UNIT OF MEASURE | CODE | METRIC UNIT OF MEASURE | CODE |
|---|---|---|---|
| POUNDS | P | KILOGRAMS | K |
| TONS | T | METRIC TONS | M |

*If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.*

*D. PROCESSES*

*1. PROCESS CODES:*

*For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.*

*For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.*

*Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).*

*2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.*

*NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:*

*1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.*

*2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.*

*3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.*

*EXAMPLE FOR COMPLETING SECTION IV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.*

| LINE NO. | A. DANGEROUS WASTE NO. *(enter code)* | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE *(enter code)* | D. PROCESSES | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1. PROCESS CODES *(enter)* | | | | 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))* |
| *X-1* | *K054* | *900* | *P* | *T03* | *D80* | | | |
| *X-2* | *D002* | *400* | *P* | *T03* | *D80* | | | |
| *X-3* | *D001* | *100* | *P* | *T03* | *D80* | | | |
| *X-4* | *D002* | | | *T03* | *D80* | | | *included with above* |
| 1 | D002 | 6,804 | K | S02 | T04 | | | Storage-Tank/Treatment-Tank |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

The 1706-KE Building was intended to treat a wide varity of laboratory waste. The majority of this waste was expected to be acidic or caustic solutions

(D002, characteristic, corrosive, dangerous waste). Approximately 6,804 kilograms (15,000 pounds) of waste could have been treated in the 1706-KE per year.

V. FACILITY DRAWING **Refer to attached drawing(s).**

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS **Refer to attached photograph(s).**

All existing facilities must include photographs *(arial or ground-level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION **This information is provided on the attached drawing(s) and photograph(s).**

| LATITUDE *(degrees, minutes, & seconds)* | | | | | LONGITUDE *(degrees, minutes, & seconds)* | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

☐ B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

| 1. NAME OF FACILITY'S LEGAL OWNER | 2. PHONE NO. *(area code & no.)* |
|---|---|
| | |

| 3. STREET OR P.O. BOX | 4. CITY OR TOWN | 5. ST. | 6. ZIP CODE |
|---|---|---|---|
| | | | |

IX. OWNER CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| John D. Wagoner, Manager<br>U.S. Department of Energy<br>Richland Operations Office | John D. Wagoner | 09/26/1996 |

X. OPERATOR CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| SEE ATTACHMENT | | |

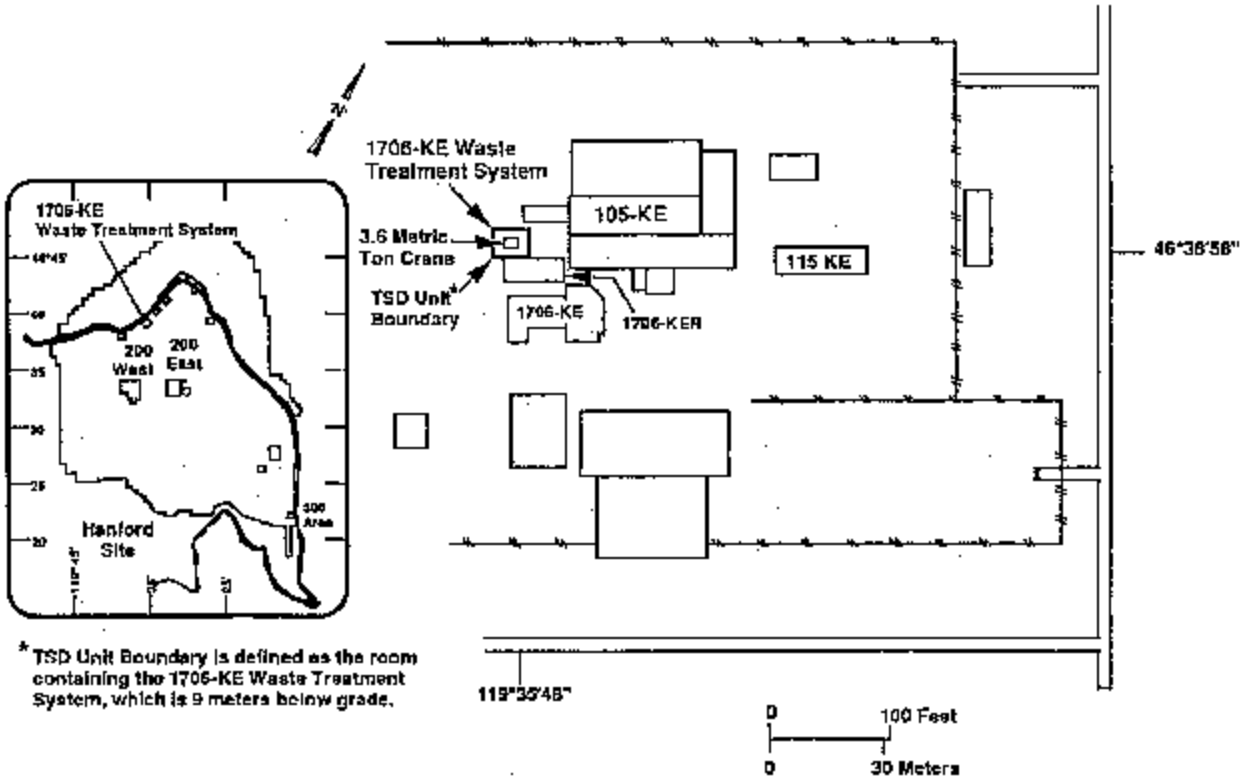
*X. OPERATOR CERTIFICATION*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

John D. Wagoner 9/26/96
Owner/Operator Date
John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

H.J. Hatch 9/13/96
Co-Operator Date
H. J. Hatch
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

# 1706-KE Waste Treatment System




H96070161.7

# 1706-KE WASTE TREATMENT SYSTEM

**WASTE STORAGE TANK WITH HEPA VACUUM FILTER SYSTEM INCLUDING WASTE FEED SHUTOFF**

**46°38'58"**
**119°35'48"**

**132285 -1CN**
**(PHOTO TAKEN 1987)**

# 1706-KE WASTE TREATMENT SYSTEM

**ION EXCHANGE COLUMN AND WASTE ACCUMULATION TANK**

**46°38'58"**
**119°35'48"**

**87000734-1CN**
**(PHOTO TAKEN 1987)**

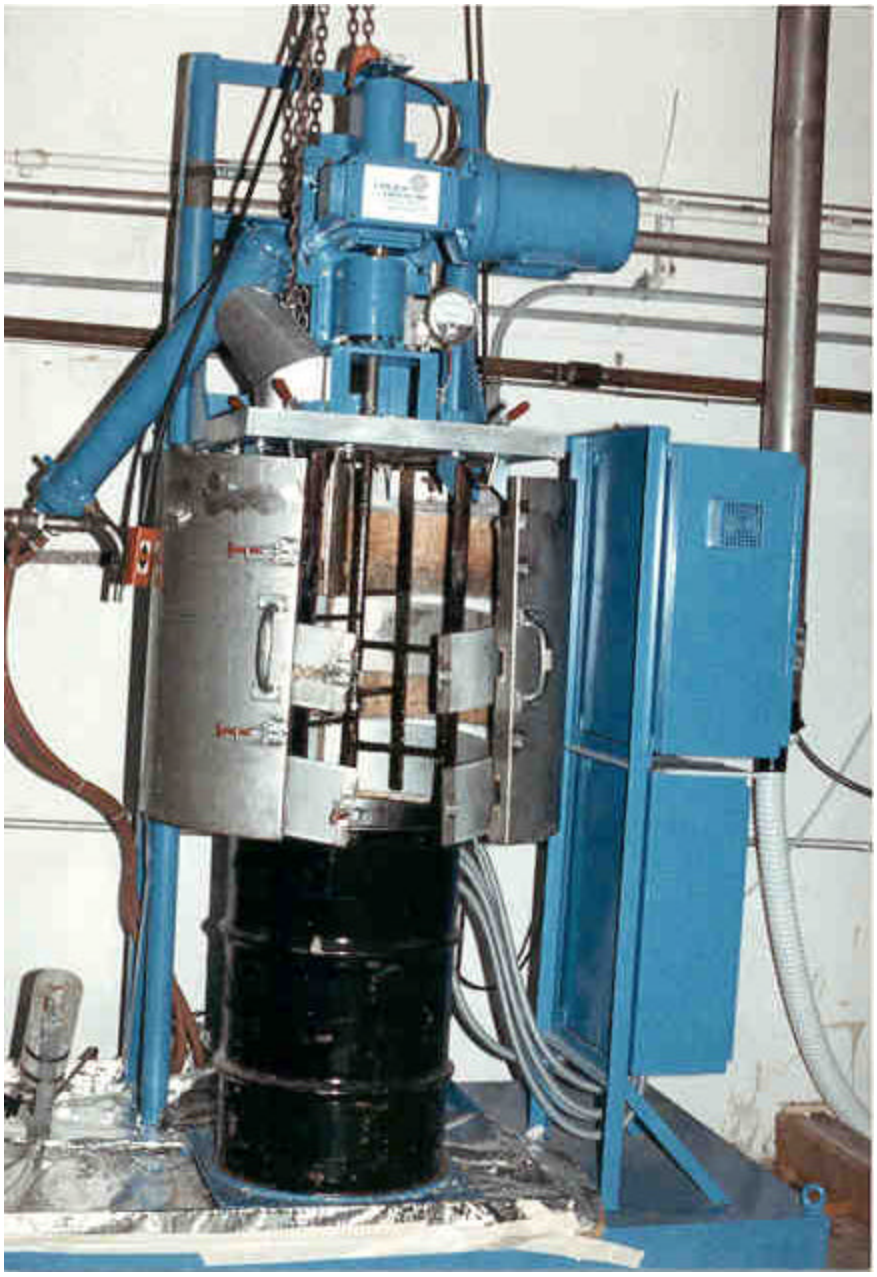
# 1706-KE WASTE TREATMENT SYSTEM

**ION EXCHANGE COLUMN AND ASSOCIATED PIPING**

**46°38'58"**
**119°35'48"**

**8700734-3CN**
**(PHOTO TAKEN 1987)**

# 1706-KE WASTE TREATMENT SYSTEM



**SOLIDIFICATION UNIT SHOWN IN UP POSITION**

**46°38'58"**
**119°35'48"**

**132285 -6CN**
**(PHOTO TAKEN 1986)**

# 1706-KE WASTE TREATMENT SYSTEM

**SHOWN IN DOWN POSITION EVAPORATING WASTE**

**46°38'58"**
**119°35'48"**

**8700734-8CN**
**(PHOTO TAKEN 1987)**

# 1706-KE WASTE TREATMENT SYSTEM

**SYSTEM CONTROL PANEL**

**46°38'58"**
**119°35'48"**

**132285 -2CN**
**(PHOTO TAKEN 1986)**

# 1706-KE WASTE TREATMENT SYSTEM

**CONDENSATE TANK**

**46°38'58"**
**119°35'48"**

**132285 -3CN**
**(PHOTO TAKEN 1986)**

# 1706-KE WASTE TREATMENT SYSTEM

**EXHAUST FILTER SYSTEM**

**46°38'58"**
**119°35'48"**

**8700734-6CN**
**(PHOTO TAKEN 1987)**