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FACT SHEET
**PART III, OPERATING UNIT 8, 222-S DANGEROUS & MIXED WASTE TREATMENT,
STORAGE & DISPOSAL UNIT**

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1 **FACT SHEET**

2 **PART III, OPERATING UNIT 8, 222-S DANGEROUS & MIXED WASTE TREATMENT,**
3 **STORAGE & DISPOSAL UNIT**

4 **UNIT DESCRIPTION**

5 The 222-S Operating Unit Group was formerly called the 222-S Dangerous and Mixed Waste TSD Unit
6 or the 222-S Laboratory Complex. The name was changed to clarify that the permit covers only certain
7 areas within the laboratory.

8 The operating unit group is in the 200 West Area of the Hanford Site. Laboratory and waste management
9 operations began in June 1951.

10 The 222-S Operating Unit Group can receive, package, repackage, sample, treat, and store dangerous or
11 mixed waste from onsite generating units or offsite generators for analyses at the 222-S Laboratory. The
12 Permittees may manage the following wastes at the 222-S Operating Unit Group:

- 13 • Dangerous or mixed waste that is generated from processes at the Hanford site.
14 • Waste that is specifically identified in Section II, paragraph 8 of the Settlement Agreement re:
15 Washington v. Bodman, Civil No. 2:30-cv-05018-AAM, January 6, 2006.

16 No other wastes may be managed at 222-S Operating Unit Group unless authorized by a permit
17 modification decision under Permit Condition I.C.3. Requests for Permit modifications must be
18 accompanied by an evaluation adequate for Ecology to comply with the State Environmental Policy Act.

19 The 222-S Operating Unit Group consists of the following four dangerous waste management units:

- 20 1. **222-S Dangerous and Mixed Waste Storage Area:** Container storage of solid and/or liquid
21 dangerous and/or mixed waste.
22 2. **Room 2-B storage area (northern portion of Room 2-B):** Container storage of solid and/or
23 liquid dangerous and/or mixed waste.
24 3. **Room 4-E:** Container storage of solid and/or liquid dangerous and/or mixed waste.
25 4. **219-S Waste Handling Facility:** Tank system for treatment and storage of liquid mixed waste.

26 **222-S Dangerous and Mixed Waste Storage Area (DMWSA)**

27 The DMWSA is north of the 222-S Laboratory. It consists of two metal storage structures (see the Part A
28 Form). Dangerous and mixed waste can be packaged, repackaged, sampled, and stored at the DMWSA.
29 The waste is stored in approved containers or other approved packages and overpacks until sent to another
30 222-S dangerous waste management unit; an onsite treatment, storage, and disposal (TSD) unit; or an
31 offsite TSD facility.

32 **Room 2-B Northern Portion**

33 Room 2-B is within the 222-S Laboratory. The northern portion of Room 2-B is physically isolated from
34 the rest of the room. The area is locked and controlled to prevent unauthorized personnel from entering.

35 Dangerous and/or mixed waste can be packaged, repackaged, sampled, and stored in the northern portion
36 of Room 2-B. Waste is stored in containers until it goes to another 222-S dangerous waste management
37 unit, an onsite TSD unit, or an offsite TSD facility.

38 Within Room 2-B are Hood 16 and related sinks. The sinks are an introduction point for transfer of liquid
39 mixed and radiological waste from containers to the 219-S Tank System. The waste going to the
40 219-S Tank System from Hood 16 meets 219-S Tank System waste acceptance criteria.

41 The southern portion of Room 2 is not subject to this permit.

1 **Room 4-E**

2 Room 4-E is within the 222-S Laboratory. Room 4-E is locked and controlled to prevent unauthorized
3 personnel from entering.

4 Dangerous and/or mixed waste can be packaged, repackaged, sampled, and stored in Room 4-E. Solid
5 and/or liquid dangerous and/or mixed waste is stored in containers until sent to another 222-S dangerous
6 waste management unit, an onsite TSD unit, or an offsite TSD facility.

7 **219-S Waste Handling Facility**

8 The 219-S Waste Handling Facility is northeast of the 222-S Laboratory. It is used for storage and
9 treatment of liquid dangerous and/or mixed waste. It includes an operating gallery, a sample gallery, and
10 the 219-S Tank System. The 219-S Tank System also has related equipment, secondary containment
11 vaults, and leak detection.

12 The 219-S Tank System has four stainless steel tanks. Three of the tanks are active (Tanks 101, 102, and
13 104) and one is inactive (Tank 103). Tank 103 was drained, isolated, and rinsed, and it is no longer used
14 for waste management. Tank 103 will remain in place until final closure of the tank system.

15 The 219-S Tank System includes the piping and leak detection from the point where the piping starts in
16 the 222-S Laboratory, through the waste tanks and associated piping, to the exterior wall of the waste tank
17 vault, to the waste lines that go to the tank farms. The piping from the 222-S Laboratory, as part of the
18 219-S Tank System, originates in several locations throughout the building.

19 The lines are encased for secondary containment from the point of origin at the laboratory to the
20 secondary containment for the waste tanks. However, Ecology has approved two variances to the
21 secondary containment requirements. These variances are listed in Addendum C (Process Information),
22 Section C.3.3.

23 Tank 101 and Tank 104 are used for storage and treatment of mixed waste. Treatment of the waste in
24 Tank 101 and Tank 104 is a best management practice, not a regulatory requirement (not intended to
25 change or eliminate existing waste numbers). This treatment is to protect the tank and extend its design
26 life by reducing the corrosion from some of the acids in the tank. When workers treat the waste in these
27 tanks with caustic or sodium nitrite, they use the drain lines in Room 2-B or the hot cells.

28 Workers transfer mixed waste from Tanks 101 and Tank 104 to Tank 102 for treatment and storage
29 before transfer to the double-shell tank (DST) system. They treat the waste with sodium hydroxide and
30 sodium nitrite to meet DST System waste acceptance criteria for safe storage.

31 This permit also allows shipment of waste in Tank 102 to onsite and offsite TSD units.

32 **TYPE AND QUANTITY OF WASTE**

33 The permitted parts of the 222-S Laboratory store and treat a huge variety of dangerous and mixed
34 wastes. Most of the waste they handle is liquid. For the types of waste by dangerous waste, see the Part
35 A Form for the 222-S Operating Unit Group.

36 The maximum process design capacity for container storage in the 222 S DMWSA, Room 4-E, and the
37 northern portion of Room 2-B is 28,470 liters.

38 The tanks in the 219-S Waste Handling Facility have a total maximum process design capacity of 37,472
39 liters for tank storage. The capacity of each tank is:

- 40 • Tank 101 – 15,140 liters.
- 41 • Tank 102 – 15,140 liters.
- 42 • Tank 104 – 7,192 liters.

1 The waste in the tanks consists of:

- 2 • Unused sample portions.
- 3 • Unused sample dilutions.
- 4 • Expired reagents.
- 5 • Analytical waste from sample analysis or treatability studies
- 6 • Standards materials.
- 7 • Other wastes that meet 219-S waste acceptance criteria.

8 **BASIS FOR PERMIT CONDITIONS**

9 This permit is intended to protect human health and the environment while ensuring proper management
10 of waste at the 222-S Operating Unit Group. The permit addenda are incorporated into this permit and
11 are enforceable by reference. The conditions and addenda are derived from the permit application.
12 Ecology has reviewed the permit application for the 222-S Operating Unit Group to ensure the unit meets
13 dangerous waste facility standards.

14 The permit includes requirements for complying with environmental standards and maintaining and
15 modifying the permit. The permit conditions address specifics such as personnel training, adequate
16 staffing, process controls, and inspection requirements.

17 **GENERAL WASTE MANAGEMENT REQUIREMENTS**

18 Condition III.8.B.1 provides overall authorization to store dangerous/mixed waste in the dangerous waste
19 management units in the 222-S Operating Unit Group. Storage of dangerous and/or mixed wastes in
20 support of analyses for Hanford site clean-up operations is the main function of this group.

21 **WASTE ANALYSIS REQUIREMENTS**

22 Condition III.3.C.1 requires the Permittees to comply with the requirements in Addendum B (Waste
23 Analysis Plan) for sampling and analysis of all dangerous and/or mixed waste. The basis of this condition
24 is [WAC 173-303-300\(5\)](#).

25 Addendum B provides for sampling and analysis and associated procedures necessary to accept and
26 manage wastes and storage of containerized wastes under the Permit.

27 **RECORDKEEPING AND REPORTING**

28 Condition III.8.D is established following the requirements of [WAC 173-303-380](#) for requirements not
29 included elsewhere in this permit.

30 **SECURITY**

31 The 222-S Operating Unit Group is within Hanford's secured area. Access to the unit is subject to the
32 general security provision of Condition II.L. Security provisions, access controls, and signage specific to
33 this unit will comply with the requirements of [WAC 173-303-310](#).

34 **PREPAREDNESS AND PREVENTION**

35 Preparedness and prevention requirements applicable to the 222-S Operating Unit Group are taken from
36 Addendum F. These requirements address internal and external communications with unit personnel and
37 emergency responders (Hanford Fire Department, the hazardous materials response team, or Hanford
38 patrol) in case of fire or other emergency.

39 **CONTINGENCY PLAN**

40 Contingency plan requirements are in Conditions II.A, III.8.G, and Addendum J.

1 **INSPECTIONS**

2 Condition II.X, Condition III.8.H, and Addendum I require the Permittees to establish a written inspection
3 schedule and to conduct periodic inspections following the schedule. The Permittees must correct
4 problems found during these inspections. Condition II.X also has overall inspection recordkeeping
5 requirements. The basis for these inspections requirements is [WAC 173-303-320](#).

6 **TRAINING**

7 Condition III.8.I requires the Permittees to develop and maintain a training program for facility personnel.
8 The Permittees must maintain the training requirements in Addendum G in the training plan required by
9 Condition II.C.1. This plan will be specific to the positions and job descriptions associated with the 222-
10 S Operating Unit Group. The training program, the written training plan, and records must meet the
11 requirements of [WAC 173-303-330](#).

12 **CLOSURE**

13 Condition III.8.K.1 requires that dangerous waste management units in Operating Unit Group 8 be closed
14 in accordance with Addendum H.

15 **CONTAINER MANAGEMENT STANDARDS**

16 Condition III.8.O provides general authorization to maintain and store waste containers in a manner that
17 maintains the integrity of the container.

18 **TANK MANAGEMENT STANDARDS**

19 Condition III.8.P addresses tank management standards for the 219-S Tank System. Due to the ALARA
20 concerns associated with the 219-S Tank System, signs identifying the tanks contents and major risks
21 associated with the contents are posted at personnel access points to the system. These signs meet the
22 requirements of [WAC 173-303-640\(5\)](#) and [WAC 173-303-395\(6\)](#).

23 The tanks within the 219-S Tank System are not labeled. Instead, administrative physical access controls
24 are in place to prevent access to the system or exposure to wastes managed by the tank system.

25 **REQUESTED VARIANCES OR ALTERNATIVES**

26 Ecology has approved two variances to the secondary containment requirements:

- 27
- 28 • A 2-1/2 inch long vertical section of pipeline penetrates the floor of Room 1-J. The section of
29 pipe is terminated in Room 1-J, and it connects to the encased pipeline in tunnel T-4.
 - 30 • A drain header in tunnel T-8 consists of a valve and a small section of pipe without double
31 encasement. The drain header does not operate under pressure and is sloped upgradient of the
liquid flow in the pipe.

32 See Addendum C, Section 3.3 for more information about these two variances.

33 The tanks within the 219-S Tank System are not labeled. As an alternative to tank labels, administrative
34 controls and physical access controls are in place to prevent access to the 219-S Tank System or exposure
35 to wastes managed by the tank system. These controls fulfill the requirements of [WAC 173-303-
36 640\(5\)\(d\)](#).

37 **STATE ENVIRONMENTAL POLICY ACT (SEPA)**

38 The SEPA determination for 222-S Operating Unit Group is in the Hanford-Wide Permit Fact Sheet.

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