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**NON-RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION APPROVAL ORDER
CONDITIONS AND RESTRICTIONS
DE14NWP-001**

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1 **NON-RADIOACTIVE AIR EMISSIONS**
2 **NOTICE OF CONSTRUCTION APPROVAL ORDER**
3 **CONDITIONS AND RESTRICTIONS**
4 **DE14NWP-001**

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6 **REGULATORY AUTHORITY**

7 Pursuant to the Washington State Department of Ecology (Ecology) General Regulations for Air
8 Pollution Sources, Chapter 173-400 Washington Administrative Code (WAC), and Controls for
9 New Sources of Toxic Air Pollutants, Chapter 173-460 WAC, Ecology now finds the following:

10 **FINDINGS:**

- 11 1. The United States Department of Energy (DOE) proposes to modify their existing facility
12 (Hanford) located in Richland, Washington.
- 13 2. A Notice of Construction (NOC) application was submitted on July 08, 2014 and
14 supplemented by email on August 20, 2014. The application was found to be complete
15 on August 26, 2014.
- 16 3. DOE had a prior NOC for a Rotary Core Sampling System, DE98NWP-005, deemed
17 obsolete and cancelled under a letter issued from Doug Hendrickson of Ecology to David
18 Brockman and Shirley Olinger of DOE on October 14, 2008.
- 19 4. Hanford is an existing major stationary source.
- 20 5. The proposed project consists of operating a tank core sampling system in high purge gas
21 flow mode with a primary purpose of tank waste sampling, characterization and analysis.
22 The core sampling system is a platform-mounted unit able to be set on any tank,
23 including single shell tanks (SSTs), double shell tanks (DSTs), or miscellaneous tanks
24 using a crane. The system can be operated in low purge gas flow mode (≤ 10 standard
25 cubic feet per minute (scfm)) or high purge gas flow (>10 scfm).
- 26 6. The NOC application is only for operation of the system in high purge gas mode.
- 27 7. Emissions of criteria pollutants from the proposed project are below the Prevention of
28 Significant Deterioration Significant Emission Rates.
- 29 8. Hanford is located in a Class II Area designated as “attainment” for the purpose of NOC
30 permitting for all pollutants.
- 31 9. Criteria air pollutant emission increases from the proposed project are below the *de*
32 *minimis* levels in WAC 173-400-110 with the exception of identified Toxic Air Pollutants
33 (TAPs).
- 34 10. As proposed, the project would emit four TAPs exceeding WAC 173-460-150 *de minimis*
35 levels including dimethyl mercury, n-nitrosodimethylamine, ammonia, and hexavalent
36 chromium. Ammonia did not exceed the small quantity emission rate (SQER).
37 Hexavalent chromium (3.47E-03 pounds/year) exceeded the (SQER) limit of 1.28E-03
38 pounds/year, n-Nitrosodimethylamine (9.13E-02 pounds/year) exceeded the SQER limit
39 of 4.16E-02, and dimethyl mercury emissions (3.79E-08 pounds/24-hr) exceeded the
40 SQER limit of 1.00E-99 pounds/24-hr.
- 41 11. All TAPs met the ASILs except for dimethyl mercury.

- 1 12. The proposed project anticipates emission of dimethyl mercury (Chemical Abstract
2 Services [CAS] # 593-74-8), resulting in an ambient consequence above its Acceptable
3 Source Impact Levels (ASIL) of WAC 173-460-150. Emissions of a TAP with ambient
4 consequences above its ASIL require approval of a Second Tier Petition WAC 173-460-
5 090. Second Tier analysis indicated exhauster emissions are permissible as they fall
6 within the risk limits defined in WAC 173-460-090(7).
- 7 13. The proposed project has a self-limiting condition of 300 hours per year while operating
8 in high purge gas mode.
- 9 14. The high purge gas mode flow rate will not exceed 120 standard cubic feet per minute
10 (scfm).
- 11 15. The exhauster associated with the core sampler for use on single sheel tanks (SSTs),
12 double shell tanks (DSTs), and other tanks, such as catch tanks, without an already
13 permitted exhauster evaluated for dimethyl mercury release will be dedicated and only
14 used with the core sampler.
- 15 16. Best Available Control Technology (BACT) and Toxics Best Available Control
16 Technology (tBACT) for the operation of the core sampler in high purge gas mode has
17 been determined to be operation of an exhauster system with at least a pre-filter and one
18 nuclear grade HEPA filter.
- 19 17. The proposed project, if constructed and operated as herein required, will provide BACT
20 and tBACT.
- 21 18. The proposed project, if operated as herein required, will be in accordance with
22 applicable rules and regulations, as set forth in Chapter 173-400 WAC and Chapter 173-
23 460 WAC, and the operation thereof will not result in ambient air quality standards being
24 exceeded.
- 25 19. The project will have no significant impact on air quality.

26
27 **THEREFORE, IT IS ORDERED** that the project as described in said Notice of Construction
28 application, and as detailed in emissions estimates and impact and control technology
29 assessments submitted to the Washington State Department of Ecology in reference thereto, is
30 approved for construction, installation, and operation, provided compliance with the conditions
31 and restrictions described below. This Order shall be identified as
32 **NOC ORDER DE14NWP-001.**

33

1 **1.0 APPROVAL CONDITIONS**

2 **1.1 Effective Date**

3 The effective date of this authorization shall be that as signed in Section 4.0. All references to
4 procedures or test methods shall be to those in effect as of the effective date of this ORDER.

5 **1.1 Emission Limits**

6 **1.1.1** Visible emissions from the exhauster stack shall not exceed five (5) percent opacity
7 during high air purge operations.

8 **1.1.2** All TAPs, as submitted in the Permittee's Notice of Construction Application (Table 1),
9 shall be below their respective ASIL or approved through a Second Tier review.

10 **1.1.3** Ammonia emissions from the project shall not exceed 3.83 pounds per day on exhausters
11 that are not permitted under Approval Order DE11NWP-001, Rev 1.

12 **1.1.4** Ammonia emissions from the project occurring on tanks permitted under Approval Order
13 DE11NWP-001, Rev 1, are bound by the limits given in Approval Order DE11NWP-001,
14 Rev 1.

15 **1.2 Operational Limits**

16 **1.2.1** The core sampling system when operating in high purge gas mode will have an operating
17 exhauster system connected with the effluent from the tank being sampled.

18 **1.2.2** The core sampling system is limited to operating 300 hours annually in high gas purge
19 mode.

20 **1.2.3** The ventilation systems shall be operated in compliance with tBACT controls in Finding
21 16.

22 **1.3 Compliance Demonstration**

23 **1.3.1** Compliance with Approval Condition 1.1.1 shall be met by Tier 3 Visible Emissions
24 Survey requirements of the Hanford Air Operating Permit.

25 **1.3.2** Should visible emissions be observed which are not solely attributable to water
26 condensation, compliance with Approval Condition 1.1.1 shall be met by performing an
27 opacity determination utilizing 40 Code of Federal Regulations (CFR) Part 60,
28 Appendix A, Method 9, providing that such determination shall not place the visible
29 emission observer in hazard greater than that identified for the general worker.

30 **1.3.3** Compliance with Approval Condition 1.1.2 shall be demonstrated by stack sampling as
31 described in Section 3.0 for TAPs, and applying these concentration readings with
32 contemporaneous stack flow rate and temperatures and operating time to determine the
33 mass release rate of these TAPs in pounds and their respective release rate averaging
34 times in WAC 173-460-150.

35 **1.3.4** Compliance with Approval Condition 1.1.3 shall be demonstrated by stack sampling as
36 described in Section 3.0 for ammonia, and applying these concentration readings with
37 contemporaneous stack flow rate and temperatures and operating time to determine daily
38 release rate of ammonia.

1 **1.3.5** Compliance with Approval Condition 1.2.2 shall be demonstrated by installing a non-
2 resettable hour meter on the core sampling system to record when the core sampling
3 system is operating in high purge gas mode. The run times shall be reported on a 12-
4 month rolling sum basis using the hour meter times.

5 **1.3.6** Compliance with Approval Condition 1.2.3 shall be met by operating the exhauster
6 systems in accordance with tBACT emission controls found for this project.

8 **2.0 NOTIFICATIONS AND SUBMITTALS**

9 **2.1 Addressing**

10 Any required notifications and submittals required under these Approval Conditions shall be sent
11 to:

12 Washington State Department of Ecology
13 Nuclear Waste Program
14 3100 Port of Benton Boulevard
15 Richland, Washington 99354

16 **2.2 Operational Notice**

17 Notification will be made at least ten (10) days prior to initial operation of the core sampling
18 system in high gas purge mode.

19 **2.3 Recordkeeping**

20 Specific records shall be kept on the Hanford Site by the Permittee and made available for
21 inspection by Ecology upon request. The records shall be organized in a readily accessible
22 manner and cover a minimum of the most recent sixty (60) month period. The records to be kept
23 shall include the following:

- 24 1. Records of calibration of stack gas flow rate and temperature measurement devices.
- 25 2. Exhauster system stack flow rates and temperatures records.
- 26 3. Emission monitoring results required in Section 3.0.
- 27 4. Supporting data and calculations to demonstrate compliance as detailed in Approval
28 Conditions 1.3.3 and 1.3.4.
- 29 5. All monitoring and operations records required to operate and maintain the emission
30 control equipment which implements tBACT as described in Section 1.0.
- 31 6. Laboratory analysis result summaries taken in accordance with these approval conditions
32 of any samples undertaken after the effective date of this Order from tank headspaces or
33 primary tank ventilation system exhaust which are examined for organic species or other
34 TAPS.

35 **2.4 Reporting**

36 Results of emission assessments conducted pursuant to Section 3.1 shall be submitted to Ecology
37 within ninety (90) days of completion of such assessment.

38 Identification of any TAP not previously identified within the Notice of Construction
39 Application emissions estimate shall be submitted to Ecology within ninety (90) days of

1 completion of laboratory analyses which verify emissions of that toxic air pollutant from the
2 project.

3 Visible emission surveys, conducted pursuant to Compliance Demonstration requirement 1.3.2,
4 shall be submitted to Ecology within thirty (30) days of completion of the survey with an
5 assessment of the cause of visible emissions and a report of the maintenance conducted to
6 maintain the subject exhaust system's tBACT operations.

7 High purge gas mode rolling monthly calculations shall be submitted to Ecology by January 31.
8 The submission will cover the previous 12 months (i.e. January through December) hour meter
9 readings and calculation of total hours of operation. Ecology shall be notified within seven (7)
10 days of any calculation of the rolling monthly calculations that indicate exceedance of 300 hours
11 of operations on a rolling monthly basis.

12

13 **3.0 EMISSION MONITORING**

14 The following sampling and monitoring are required when the core sampler is operating in high
15 purge gas mode in a tank not previously sampled under this notice of Construction in order to
16 verify emissions estimates and compliance with Section 1.1, above.

17 **3.1 Ammonia Assessment**

18 Ammonia stack concentrations shall be sampled. Ammonia sampling and analysis will be in
19 accord with approved alternative sampling procedures including the use of Draeger tubes to
20 measure stack gas concentration of ammonia providing such devices are spanned to
21 appropriately measure the stack gas ammonia concentration. Stack flow rate and temperature
22 will be applied with the ammonia stack gas concentration to report ammonia emission in terms
23 of pounds per day.

24 **3.2 TAPs Emission Assessment**

25 Permittee will sample and analyze exhaust emissions during high gas purge mode for
26 hexavalent chromium (CAS # 7440-43-9), ammonia (CAS # 7664-41-7), n-
27 Nitrosodimethylamine (CAS # 62-75-9), and dimethyl mercury (CAS # 593-74-8). Analytical
28 methods for the analyses shall be the EPA, Occupational Safety and Health Administration
29 (OSHA), or National Institute for Occupational Safety and Health (NIOSH) approved method.
30 Any alternative will require approval by Ecology before being used.

31

32 **4.0 APPROVAL ORDER AND RESTRICTIONS**

33 Operation of the core sampling system in high purge gas mode is intended to obtain samples
34 primarily from Hanford's SSTs, DSTs, 100/200-series waste tanks, and miscellaneous catch
35 tanks on the Hanford Site.

36 Approved TAP emissions, for purposes of evaluation of potential future emission increases, shall
37 be as identified within the NOC application and detailed in Table 1.

1 5.0 GENERAL CONDITIONS

2 All plans, specifications, and other information submitted to the Department of Ecology relative
3 to this project and any authorizations or approvals or denials in relation thereto shall be
4 incorporated herein and made a part thereof.

5 5.1 Availability of Order and Operations & Maintenance (O&M) Manual

6 Legible copies of the Order and the O&M manual shall be available to employees in direct
7 operation of the tank farm exhaust systems, and be available for review upon request by
8 Ecology.

9 5.2 Discontinuing Construction and/or Operations

10 It shall be grounds for rescission of this approval if physical construction and/or operation is
11 discontinued for a period of eighteen (18) months or more. Ecology may extend the 18-month
12 period upon a satisfactory showing that an extension is justified.

13 5.3 Compliance Assurance Access

14 Access to the source by representatives of Ecology or the EPA shall be permitted upon request.
15 Failure to allow such access is grounds for enforcement action under the federal Clean Air Act or
16 the Washington State Clean Air Act, and may result in revocation of this Approval Order.

17 5.4 Equipment Operation

18 Operation of the core sampling system and related equipment shall be conducted in compliance
19 with all data and specifications submitted as part of the NOC application and in accordance with
20 the O&M manual, unless otherwise approved in writing by Ecology.

21 5.5 Activities Inconsistent with the NOC Application and this Approval Order

22 Any activity undertaken by the permittee or others, in a manner that is inconsistent with the NOC
23 application and this determination, shall be subject to Ecology enforcement under applicable
24 regulations.

25 5.6 Obligations Under Other Laws or Regulations

26 Nothing in this Approval Order shall be construed to relieve the Permittee of its obligations
27 under any local, state or federal laws or regulations.

28 5.7 Modifications

29 Any modifications to the core sampling system's operating and maintenance procedures,
30 contrary to information in the NOC application, shall be reported to Ecology at least 60 days
31 before such modification. Such modification may require a new or amended NOC Approval
32 Order.

33

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
<p>Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503</p>	<p>Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608</p>
<p>Pollution Control Hearings Board 1111 Israel RD SW STE 301 Tumwater, WA 98501</p>	<p>Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903</p>

1 This Authorization may be modified, suspended, or revoked in whole, or in part, for cause
2 including, but not limited to, the following:

- 3 1. Violation of any terms or conditions of this authorization;
- 4 2. Obtaining this authorization by misrepresentation, or failure to fully disclose all relevant
5 facts.

6 The provisions of this authorization are severable and, if any provision of this authorization, or
7 application of any provisions of this authorization to any circumstance, is held invalid, the
8 application of such provision to their circumstances, and the remainder of this authorization,
9 shall not be affected thereby.

10 The New Source Review Fee has been assessed according to WAC 173-455. No approval of a
11 permit or service for any activity covered in this Order will be valid until the required fee is paid
12 in full.

13 **DATED** at Richland, Washington, this XXth day of November 201X.

REVIEWED AND PREPARED BY:

Philip M. Gent, PE

APPROVED BY:

Jane A. Hedges

14

1 Table 1

A	B	C	D	E	F	G	H	I	J	K	L	M
Chemical Name	CAS #	Avg. Period	Flux Per Tank (g/sec)	Dispersion Factor ($\mu\text{g}/\text{m}^3$)/(g/sec)	Maximum Offsite Concentration ($\mu\text{g}/\text{m}^3$)	Local Release (lb/averaging period)	WAC 173-460-150 ASIL ($\mu\text{g}/\text{m}^3$)	WAC 173-460-150 SQER (lb/averaging period)	WAC 173-460-150 De Minimis (lb/averaging period)	Exceeds ASIL	Exceeds SQER	Exceeds De Minimis
					$F=D \cdot E$	$G=D \cdot (\text{Seconds per Averaging period}/453.6)$				$K=F > H$	$L=G > I$	$M=G > J$
Ethylbenzene	100-41-4	Year	2.05E-05	3.22E-01	6.59E-06	4.87E-02	0.40	76.8	3.84	No	No	No
Styrene	100-42-5	24-hr	6.70E-06	8.90E+00	5.96E-05	4.26E-04	900	118	5.91	No	No	No
Benzyl Chloride	100-44-7	Year	1.94E-07	3.22E-01	6.25E-08	4.62E-04	0.0204	3.91	0.196	No	No	No
Nitrogen dioxide	10102-44-0	1-hr	7.99E-04	7.88E+01	6.30E-02	6.34E-03	470	1.03	0.457	No	No	No
n-Nitroso-n-methylethylamine	10595-95-6	Year	2.81E-08	3.22E-01	9.04E-09	6.69E-05	0.000159	0.0305	0.00153	No	No	No
p-Xylene	106-42-3	24-hr	2.36E-05	8.90E+00	2.10E-04	1.50E-03	221	29	1.45	No	No	No
1,4-Dichlorobenzene	106-46-7	Year	9.00E-07	3.22E-01	2.90E-07	2.14E-03	0.0909	17.4	0.872	No	No	No
1,2-Epoxybutane	106-88-7	24-hr	5.85E-07	8.90E+00	5.21E-06	3.72E-05	20	2.63	0.131	No	No	No
1,2-Dibromoethane	106-93-4	Year	1.15E-06	3.22E-01	3.72E-07	2.75E-03	0.0141	2.71	0.135	No	No	No
1,3-Butadiene	106-99-0	Year	2.89E-06	3.22E-01	9.30E-07	6.87E-03	0.00588	1.13	0.0564	No	No	No
Acrolein	107-02-8	24-hr	4.32E-08	8.90E+00	3.84E-07	2.74E-06	0.06	0.00789	0.000394	No	No	No
Allyl Chloride	107-05-1	Year	1.48E-07	3.22E-01	4.76E-08	3.52E-04	0.167	32	1.6	No	No	No
1,2-Dichloroethane	107-06-2	Year	2.36E-05	3.22E-01	7.60E-06	5.62E-02	0.0385	7.39	0.369	No	No	No
Acrylonitrile	107-13-1M	Year	1.78E-07	3.22E-01	5.75E-08	4.25E-04	0.00345	0.662	0.0331	No	No	No
Vinyl acetate	108-05-4	24-hr	6.49E-09	8.90E+00	5.78E-08	4.12E-07	200	26.3	1.31	No	No	No
Methyl Isobutyl Ketone	108-10-1	24-hr	4.01E-05	8.90E+00	3.57E-04	2.55E-03	3000	394	19.7	No	No	No
m-Xylene	108-38-3M	24-hr	1.37E-05	8.90E+00	1.22E-04	8.67E-04	221	29	1.45	No	No	No
3-Methylphenol	108-39-4	24-hr	6.87E-08	8.90E+00	6.11E-07	4.36E-06	600	78.9	3.94	No	No	No
Toluene	108-88-3	24-hr	5.92E-04	8.90E+00	5.27E-03	3.76E-02	5000	657	32.9	No	No	No
Chlorobenzene	108-90-7	24-hr	7.24E-06	8.90E+00	6.44E-05	4.59E-04	1000	131	6.57	No	No	No
Phenol	108-95-2	24-hr	1.18E-04	8.90E+00	1.05E-03	7.49E-03	200	26.3	1.31	No	No	No

A	B	C	D	E	F	G	H	I	J	K	L	M
Chemical Name	CAS #	Avg. Period	Flux Per Tank (g/sec)	Dispersion Factor ($\mu\text{g}/\text{m}^3$)/(g/sec)	Maximum Offsite Concentration ($\mu\text{g}/\text{m}^3$)	Local Release (lb/averaging period)	WAC 173-460-150 ASIL ($\mu\text{g}/\text{m}^3$)	WAC 173-460-150 SQER (lb/averaging period)	WAC 173-460-150 De Minimis (lb/averaging period)	Exceeds ASIL	Exceeds SQER	Exceeds De Minimis
					$F=D \times E$	$G=D \times (\text{Seconds per Averaging period}/453.6)$				$K=F > H$	$L=G > I$	$M=G > J$
n-Hexane	110-54-3	24-hr	7.48E-05	8.90E+00	6.66E-04	4.75E-03	700	92	4.6	No	No	No
Cyclohexane	110-82-7	24-hr	2.29E-05	8.90E+00	2.04E-04	1.46E-03	6000	789	39.4	No	No	No
Ethylene glycol monobutyl ether	111-76-2	24-hr	2.20E-06	8.90E+00	1.96E-05	1.40E-04	1.30E+04	1710	85.4	No	No	No
Propylene	115-07-1	24-hr	5.69E-05	8.90E+00	5.07E-04	3.61E-03	3000	394	19.7	No	No	No
Di(2-ethylhexyl)phthalate	117-81-7	Year	1.08E-08	3.22E-01	3.48E-09	2.57E-05	0.0417	8	0.4	No	No	No
1,4-Dioxane	123-91-1	Year	1.02E-05	3.22E-01	3.28E-06	2.42E-02	0.13	24.9	1.25	No	No	No
Perchloroethylene	127-18-4	Year	2.34E-05	3.22E-01	7.55E-06	5.58E-02	0.169	32.4	1.62	No	No	No
Vanadium Pentoxide	1314-62-1	1-hr	1.70E-06	7.88E+01	1.34E-04	1.35E-05	30	0.0657	0.00329	No	No	No
Polychlorinated Biphenyls (PCBs)	1336-36-3	Year	2.95E-07	3.22E-01	9.50E-08	7.02E-04	0.00175	0.336	0.0168	No	No	No
Trans-1,2-dichloroethene	156-60-5	24-hr	1.73E-09	8.90E+00	1.54E-08	1.10E-07	807	106	5.3	No	No	No
Butylated hydroxyanisole	25013-16-5	Year	2.06E-08	3.22E-01	6.64E-09	4.91E-05	17.5	3360	168	No	No	No
Formaldehyde	50-00-0	Year	3.41E-07	3.22E-01	1.10E-07	8.12E-04	0.167	32	1.6	No	No	No
n-Nitrosodiethylamine	55-18-5	Year	2.81E-08	3.22E-01	9.04E-09	6.69E-05	1.00E-04	0.0192	0.000959	No	No	No
Carbon Tetrachloride	56-23-5	Year	2.38E-05	3.22E-01	7.65E-06	5.66E-02	0.0238	4.57	0.228	No	No	No
1,1-Dimethylhydrazine	57-14-7	24-hr	2.52E-08	8.90E+00	2.25E-07	1.60E-06	0.5	0.0657	0.00329	No	No	No
Propylene Glycol	57-55-6	24-hr	3.26E-06	8.90E+00	2.90E-05	2.07E-04	28.5	3.75	0.187	No	No	No
n-Nitrosomorpholine	59-89-2	Year	1.30E-07	3.22E-01	4.18E-08	3.09E-04	0.000526	0.101	0.00505	No	No	No
Dimethyl Mercury	593-74-8	24-hr	5.97E-10	8.90E+00	5.31E-09	3.79E-08	1.00E-99	1.00E-99	1.00E-99	Yes	Yes	Yes
Acetamide	60-35-5	Year	8.77E-08	3.22E-01	2.83E-08	2.09E-04	0.05	9.59	0.48	No	No	No

A	B	C	D	E	F	G	H	I	J	K	L	M
Chemical Name	CAS #	Avg. Period	Flux Per Tank (g/sec)	Dispersion Factor ($\mu\text{g}/\text{m}^3$)/(g/sec)	Maximum Offsite Concentration ($\mu\text{g}/\text{m}^3$)	Local Release (lb/averaging period)	WAC 173-460-150 ASIL ($\mu\text{g}/\text{m}^3$)	WAC 173-460-150 SQER (lb/averaging period)	WAC 173-460-150 De Minimis (lb/averaging period)	Exceeds ASIL	Exceeds SQER	Exceeds De Minimis
					$F=D^*E$	$G=D^*(\text{Seconds per Averaging period}/453.6)$				$K=F>H$	$L=G>I$	$M=G>J$
n-Nitrosodimethylamine	62-75-9	Year	3.83E-05	3.22E-01	1.23E-05	9.13E-02	0.000217	0.0416	0.00208	No	Yes	Yes
n-Nitrosodi-n-propylamine	621-64-7	Year	2.81E-08	3.22E-01	9.04E-09	6.69E-05	0.0005	0.0959	0.0048	No	No	No
Methyl Isocyanate	624-83-9	24-hr	2.56E-08	8.90E+00	2.28E-07	1.63E-06	1	0.131	0.00657	No	No	No
Carbon monoxide	630-08-0	1-hr	5.40E-04	7.88E+01	4.26E-02	4.29E-03	23000	50.4	1.14	No	No	No
Methyl Alcohol	67-56-1	24-hr	1.03E-03	8.90E+00	9.17E-03	6.54E-02	4000	526	26.3	No	No	No
Isopropyl Alcohol	67-63-0	1-hr	4.89E-05	7.88E+01	3.85E-03	3.88E-04	3200	7.01	0.35	No	No	No
Chloroform	67-66-3	Year	2.38E-05	3.22E-01	7.65E-06	5.66E-02	0.0435	8.35	0.417	No	No	No
Hexachloroethane	67-72-1	Year	2.44E-05	3.22E-01	7.85E-06	5.81E-02	0.0909	17.4	0.872	No	No	No
Benzene	71-43-2	Year	2.36E-05	3.22E-01	7.60E-06	5.62E-02	0.0345	6.62	0.331	No	No	No
1,1,1-Trichloroethane	71-55-6	24-hr	9.77E-07	8.90E+00	8.70E-06	6.20E-05	1000	131	6.57	No	No	No
Methyl Bromide	74-83-9	24-hr	9.30E-07	8.90E+00	8.28E-06	5.90E-05	5	0.657	0.0629	No	No	No
Methyl Chloride	74-87-3	24-hr	3.24E-06	8.90E+00	2.88E-05	2.06E-04	90	11.8	0.591	No	No	No
Hydrogen Cyanide	74-90-8	24-hr	8.25E-08	8.90E+00	7.34E-07	5.24E-06	9	1.18	0.0591	No	No	No
Lead and compounds (NOS)	7439-92-1	Year	9.50E-07	3.22E-01	3.06E-07	2.26E-03	0.0833	16	10	No	No	No
Manganese & Compounds	7439-96-5	24-hr	9.50E-07	8.90E+00	8.45E-06	6.03E-05	0.04	0.00526	0.000263	No	No	No
Mercury, Elemental	7439-97-6	24-hr	2.88E-07	8.90E+00	2.56E-06	1.83E-05	0.09	0.0118	0.000591	No	No	No
Arsenic & Inorganic Arsenic Compounds	7440-38-2	Year	9.50E-07	3.22E-01	3.06E-07	2.26E-03	0.000303	0.0581	0.00291	No	No	No
Beryllium & Compounds (NOS)	7440-41-7	Year	4.76E-08	3.22E-01	1.53E-08	1.13E-04	0.000417	0.08	0.004	No	No	No
Cadmium & Compounds	7440-43-9	Year	4.76E-07	3.22E-01	1.53E-07	1.13E-03	0.000238	0.0457	0.00228	No	No	No

A	B	C	D	E	F	G	H	I	J	K	L	M
Chemical Name	CAS #	Avg. Period	Flux Per Tank (g/sec)	Dispersion Factor (µg/m3)/(g/sec)	Maximum Offsite Concentration (µg/m3)	Local Release (lb/averaging period)	WAC 173-460-150 ASIL (µg/m3)	WAC 173-460-150 SQER (lb/averaging period)	WAC 173-460-150 De Minimis (lb/averaging period)	Exceeds ASIL	Exceeds SQER	Exceeds De Minimis
					F=D*E	G=D*(Seconds per Averaging period/453.6)				K=F>H	L=G>I	M=G>J
Chromium Hexavalent: Soluble, except Chromic Trioxide	7440-47-3	Year	1.46E-06	3.22E-01	4.69E-07	3.47E-03	6.67E-06	0.00128	6.40E-05	No	Yes	Yes
Cobalt	7440-48-4	24-hr	9.50E-07	8.90E+00	8.45E-06	6.03E-05	0.1	0.013	0.000657	No	No	No
Copper & Compounds	7440-50-8	1-hr	4.76E-07	7.88E+01	3.75E-05	3.78E-06	100	0.219	0.011	No	No	No
Sulfur dioxide	7446-09-05	1-hr	3.52E-06	7.88E+01	2.77E-04	2.79E-05	660	1.45	0.457	No	No	No
Ethyl Chloride	75-00-3	24-hr	4.15E-06	8.90E+00	3.70E-05	2.64E-04	3.00E+04	3940	197	No	No	No
Vinyl Chloride	75-01-4	Year	2.38E-05	3.22E-01	7.65E-06	5.66E-02	0.0128	2.46	0.123	No	No	No
Acetonitrile	75-05-8	Year	5.55E-05	3.22E-01	1.79E-05	1.32E-01	60	11500	576	No	No	No
Acetaldehyde	75-07-0	Year	5.95E-05	3.22E-01	1.91E-05	1.42E-01	0.37	71	3.55	No	No	No
Dichloromethane	75-09-2	Year	1.61E-04	3.22E-01	5.19E-05	3.84E-01	1	192	9.59	No	No	No
Carbon disulfide	75-15-0	24-hr	5.80E-06	8.90E+00	5.17E-05	3.69E-04	800	105	5.26	No	No	No
Ethylene oxide	75-21-8	Year	1.12E-07	3.22E-01	3.61E-08	2.67E-04	0.0114	2.19	0.109	No	No	No
Bromoform	75-25-2	Year	1.27E-07	3.22E-01	4.09E-08	3.02E-04	0.909	174	8.72	No	No	No
1,1-Dichloroethane	75-34-3	Year	3.94E-07	3.22E-01	1.27E-07	9.39E-04	0.625	120	6	No	No	No
1,1-Dichloroethylene	75-35-4	24-hr	4.53E-05	8.90E+00	4.03E-04	2.88E-03	200	26.3	1.31	No	No	No
Chlorodifluoromethane	75-45-6	24-hr	1.45E-05	8.90E+00	1.29E-04	9.18E-04	5.00E+04	6570	328	No	No	No
1-Chloro-1,1-difluoroethane	75-68-3	24-hr	1.57E-05	8.90E+00	1.40E-04	9.96E-04	5.00E+04	6570	329	No	No	No
Ammonia	7664-41-7	24-hr	6.03E-02	8.90E+00	5.37E-01	3.83E+00	70.8	9.31	0.465	No	No	Yes
Selenium & Selenium Compounds (other than Hydrogen Selenide)	7782-49-2	24-hr	8.26E-08	8.90E+00	7.35E-07	5.24E-06	20	2.63	0.131	No	No	No

A	B	C	D	E	F	G	H	I	J	K	L	M
Chemical Name	CAS #	Avg. Period	Flux Per Tank (g/sec)	Dispersion Factor ($\mu\text{g}/\text{m}^3$)/(g/sec)	Maximum Offsite Concentration ($\mu\text{g}/\text{m}^3$)	Local Release (lb/averaging period)	WAC 173-460-150 ASIL ($\mu\text{g}/\text{m}^3$)	WAC 173-460-150 SQER (lb/averaging period)	WAC 173-460-150 De Minimis (lb/averaging period)	Exceeds ASIL	Exceeds SQER	Exceeds De Minimis
					$F=D \times E$	$G=D \times (\text{Seconds per Averaging period}/453.6)$				$K=F > H$	$L=G > I$	$M=G > J$
1,2-Dichloropropane	78-87-5	Year	6.93E-07	3.22E-01	2.23E-07	1.65E-03	0.1	19.2	0.959	No	No	No
Methyl Ethyl Ketone	78-93-3	24-hr	1.39E-04	8.90E+00	1.24E-03	8.82E-03	5000	657	32.9	No	No	No
1,1,2-Trichloroethane	79-00-5	Year	8.57E-06	3.22E-01	2.76E-06	2.04E-02	0.0625	12	0.6	No	No	No
Trichloroethylene	79-01-6	Year	2.36E-05	3.22E-01	7.60E-06	5.62E-02	0.5	95.9	4.8	No	No	No
Acrylic Acid	79-10-7	24-hr	9.44E-06	8.90E+00	8.40E-05	5.99E-04	1	0.131	0.00657	No	No	No
1,1,2,2-Tetrachloroethane	79-34-5	Year	1.08E-05	3.22E-01	3.47E-06	2.57E-02	0.0172	3.3	0.165	No	No	No
2-Nitropropane	79-46-9M	24-hr	2.77E-06	8.90E+00	2.47E-05	1.76E-04	20	2.63	0.131	No	No	No
Hexachlorobutadiene	87-68-3	Year	1.68E-05	3.22E-01	5.42E-06	4.01E-02	0.0455	8.73	0.437	No	No	No
Naphthalene	91-20-3M	Year	1.88E-07	3.22E-01	6.06E-08	4.48E-04	0.0294	5.64	0.282	No	No	No
n-Nitroso-di-n-butylamine	924-16-3	Year	2.81E-08	3.22E-01	9.04E-09	6.69E-05	0.000323	0.062	0.0031	No	No	No
n-Nitrosopyrrolidine	930-55-2	Year	2.81E-08	3.22E-01	9.04E-09	6.69E-05	0.00167	0.32	0.016	No	No	No
o-Xylene	95-47-6	24-hr	2.33E-05	8.90E+00	2.07E-04	1.48E-03	221	29	1.45	No	No	No
2-Methylphenol	95-48-7M	24-hr	4.12E-07	8.90E+00	3.67E-06	2.62E-05	600	78.9	3.94	No	No	No
Cumene	98-82-8	24-hr	1.02E-06	8.90E+00	9.07E-06	6.47E-05	400	52.6	2.63	No	No	No