RCRA Compliance Inspection Report

Intel Corporation Ronler Acres

Hillsboro, Oregon

ORR000001420

May 17 & 18, 2021

Prepared by:

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Enforcement & Compliance Assurance Division
Water Enforcement & Field Branch
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Inspector Signature/Date:

KATRINA BRADSHAW Digitally signed by KATRINA BRADSHAW
Date: 2021.11.04 13:20:42 -07'00'

Supervisor Signature/Date:

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Disclaimer

This report is a summary of observations and information gathered from the facility at the time of the inspection. The information provided does not constitute a final decision on compliance with RCRA regulations, nor is it meant to be a comprehensive summary of all activities and processes conducted at the facility. The onsite inspection was conducted during the Novel Coronavirus (COVID-19) Pandemic and considerations and safety precautions were taken accordingly.

Section A: Basic Facility and Inspection Information

Facility Information

Handler Name:	Intel Corp Ronler Acres
Handler ID Number:	WAD009262171
Facility Contact(s)/Title:	Pat Gottsacker, Environmental Engineer EHS Compliance-Chem Waste
Facility Location Address:	2501 NE Century Blvd Hillsboro, OR 97124
Facility Mailing Address:	5200 NE Elam Young Parkway, MA Hillsboro, OR 97124-6497
Contact Phone Number:	Pat Gottsacker: (971) 334-4855
Contact Email Address:	Patrick.gottsacker@intel.com
GPS Coordinates of Site:	Lat: 45.547074 Long: -122.912429

Inspection Information

Inspection Type:	RCRA Focused Compliance Inspection (FCI)	
Inspection Date:	May 17, 2021	May 18, 2021
Arrival Time:	0855 hours	0850 hours
Departure Time:	1620 hours	1620 hours
Inspection Team:	Katrina (Katie) Bradshaw (EPA Region 10) Cynthia (Cindy) Schafer (EPA Region 8)	

Section B: General Facility Information

Owner/Operator Information

Intel Corporation owns and operates the Intel Corporation Ronler Acres Facility (Intel or facility).

Site Location

The Intel Corporation Ronler Acres Facility is located at 2501 NE Century Blvd in Hillsboro, Oregon. According to a review of R10 EJSCREEN, the facility is not located in an Environmental Justice area. A site map is included in Attachment C.

Background and Activities

Intel Ronler Acres is a large-scale chip manufacturing company, with approximately 12,000 employees and 20,000 contractors (many of whom are currently there for construction of the campus expansion). The chips are sold and used in automotive, servers, cell phones, computers, and other industries. It is headquartered in Santa Clara, California.

Section C: Regulatory Information

Regulatory Status

According to the RCRAInfo database, the facility first notified the agency of hazardous waste generation activities on June 2, 1995. The database indicates that the facility is currently a Large Quantity Generator (LQG) of hazardous waste. Based on my observations of waste generation, the amount of waste on site during the inspection, and the documentation in e-Manifest, the facility appeared to be generating greater than 1,000 kilograms of hazardous waste per month and was therefore an LQG at the time of the inspection.

Intel Ronler Acres is covered under NAICS code 334413 Semiconductor and Related Device Manufacturing. The facility operates under a Title V Air Permit overseen by the Oregon Department of Environmental Quality. Clean Water Services of Washington County oversees discharge to the sanitary sewer system and site stormwater discharges.

Site Hazardous Waste Information

The facility generates solvent-bearing hazardous wastes, which are managed in tanks and containers, and shipped off-site via tanker trucks for disposal. According to the waste profiles, the Corrosive Solvent Waste contains water, glycol ethers, amines, and N-Methylpyrrolidone (NMP). The General Solvent Waste contains cyclohexanone, propylene glycol methyl ether acetate (PGMEA), propylene glycol methyl ether (PGME), ethyl lactate, and isopropyl alcohol.

In its 2019 Biennial Report, the largest quantities of solvent hazardous waste generated by the facility were reported to be:

Corrosive Solvent Waste – 14,594 tons
General Solvent Waste – 9,521 tons
Solvent Acid Waste – 131 tons
Spin-On Glass (SOG) Solvent Waste – 71 tons
Solvents Containing Residue Drums – 52 tons

Section D: Description of Inspection

Purpose of Inspection

This was a Resource Conservation and Recovery Act (RCRA) inspection conducted pursuant to Oregon's federally authorized RCRA program. The facility was inspected to evaluate compliance with the organic air emissions standards found in 40 CFR Part 265, Subparts AA, BB, and CC, as incorporated by reference into the Oregon Administrative Rules at 340-100-0002. The inspection was conducted as part of the EPA National Compliance Initiative for organic emissions from RCRA facilities.

Site Access

EPA was not denied access to the facility and was allowed inspection of all areas, with the understanding that we would always be escorted by facility representatives.

Inspection Entry and Opening Conference

As a result of the COVID-19 Pandemic safety measures, this was an announced inspection. I contacted Pat Gottsacker a week prior and explained that we would be conducting a focused inspection on organic air emissions. I asked if there were any COVID-19 restrictions for visitors in place, and he said that masks and a screening questionnaire were required, but otherwise the facility was operating as normal.

The inspection team arrived at the parking lot of Building RA4 at 0845 and performed a calibration and function check on the Toxic Volatile Analyzer (TVA2020) and Forward-Looking Infrared Radar (FLIR) camera (GF-320). We then checked in with security at 0855 and waited a few minutes to meet Pat Gottsacker and Christina Morgan (EHS Compliance, Chem Waste). We presented our credentials, received our security badges, and were escorted to a conference room. Teresa Bodtker (Engineer Manager-Solvent Systems) joined us for the opening conference.

I opened the meeting by explaining that this was a focused compliance inspection for RCRA organic air emission requirements found in Subparts AA, BB, and CC of Part 265 of Chapter 40 of the Code of Federal Regulations. I explained that Cindy Schafer and I would be viewing different areas of the operations, taking photographs, and gathering data from the use of the TVA2020 and the FLIR camera. I turned it over to Inspector Schafer to ask questions about the solvent waste generation and management processes at the facility. When asked about the operations of the facility, Ms. Bodtker said that Intel Ronler Acres currently had about 12,000 employees and a lot of contractors (about 20,000) for the construction expansion of the campus. The facility operates 24 hours a day, 365 days a year. We were provided a campus site map and hazardous waste location map (See Attachments C and D). Inspector Schafer requested a list of all solvent hazardous waste tanks, with size and contents (See Attachment E).

Ms. Morgan said that they have a wastewater treatment plant (WWTP). She explained that over 80% of the solvent waste that is shipped off site is General Solvent Waste (GSW) and Corrosive Solvent Waste (CSW). However, she said, they also generate a solvent acid waste (TSSW), Thru-Silica Via (TSV), as well as Spin-On Glass Solvent Waste (SOG). Mr. Gottsacker estimated that they ship out five to seven tanker trucks per day.

While the throughput information is intellectual property, according to Intel, and they would not give some specifics, Ms. Morgan gave us a summary of the process. Twelve-inch wafers are sliced from ingot off-site and placed into a clean room tool. The four main steps include:

- Adding layers – chemical vapor deposition
- Mechanical smoothing
- Lithography – add/print on wafer
- Etching processes – chemical

These steps are repeated in various orders until the final product is obtained. There are sensors on the floor to detect solvent leaks. All tools have a vapor collection line leading to an acid scrubber. VOC exhaust goes to a Rotary Concentrator Thermal Oxidizer (RCTO), an ammonia scrubber, and an arsenic scrubber. The wastewater from the scrubbers goes to the WWTP, along with other wastewater from the facility. The vapor collection and destruction system is subject to the Clean Air Regulations, and the facility has a Title V Permit which covers the closed vent system and control devices.

Ms. Bodtker further explained that each tool has a drain which is situation over a raised metal floor. The drains connect to a central system by conveying fluid to lateral pipes. The lateral pipes feed to submains then to mains. From there, the mains either go to a lift station, then spent solvent is pumped to a tank, or the mains gravity-feed directly to a collection tank. There are sets of spend solvent tanks for each factory building. Mr. Gottsacker said they use spreadsheets to track monitoring; if a leak is found, the technician fills out a leak repair log. The facility does not use the delay of repair provision in

the Leak Detection and Repair (LDAR) regulations (i.e., everything is repaired immediately). Valves are monitored annually, with a requirement of less than 2% leak rate. There about 70 spent solvent pumps, and they do not have difficult-to-monitor or unable-to-monitor components. The facility repairs all leaks that are well below the Subpart BB leak definition but does not have a set internal leak definition. The facility uses a MiniRae 3000 photoionization detector (PID) for their LDAR program. Monitoring has been performed by both contractors and Intel employees. They calibrate with zero air and 100ppm n-hexane for the span. Inspector Schafer requested waste profiles for solvents used, LDAR monitoring logs for the last three years, and three years of repair records for Subpart BB and Subpart CC leaks (See Attachment F). Mr. Gottsacker stated that they monitor conservation tanks and rupture disks on tanks with the PID, and that they are all Level 1 tanks. He said they record CC monitoring with BB records. He said the pumps are considered No Detectable Emissions (NDE) and are monitored annually. Ms. Morgan added that they monitor all components by building and by individual waste stream.

We decided to begin monitoring in building D1D, as that was the closest, and concluded the opening conference at 1115.

Inspection Summary

After lunch, we bump checked the TVA at 1140. The 500ppm methane calibration gas read 453 ppm, and the 10,000ppm methane read 9,800 ppm, so we recalibrated the equipment (See TVA calibration log).

As we began our tour of the facility, we targeted our monitoring to the GSW and CSW tanks and components, using EPA Method 21. During the two-day tour, the inspection team monitored the following components:

Pumps	Pressure Relief Devices (PRDs)	Valves	Other (caps, connectors, flanges, etc.)
Location: D1D GSW Tank (TK 269-1-00); Date: 5/17/2021			
1	2	13	20
Location: D1D CSW Tank (TK 270-1-00); Date: 5/17/2021			
2	2	21	23
Location: D1D GSA Main Line back to Tools; Date: 5/17/2021			
0	0	3	4
Location: D1X GSW Tank (TK 269-1-00); Date: 5/17/2021			
1	2	20	24
Location: D1X SADW Tank (TK 715-1-00); Date: 5/17/2021			
1	2	12	15
Location: D1B CSW Tank (TK 270-1-00); Date: 5/18/2021			
3	3	26	31
Location: D1B GSW Tank; Date: 5/18/2021			
1	2	11	25
Location: D1B CSW Lift Station Tanks (TK 270-2-01 and TK 270-1-01); Date: 5/18/2021			
2	4	20	42
Location: D1C GSW Tank; Date: 5/18/2021			
2	2	8	27

The inspection team ended monitoring at 1545 hours on May 18, 2021.

Areas of Concern

The following areas of concern were found during this inspection:

- The facility does not have a set internal leak definition
- There was a leaking connector on D1B GSW Tank (1560 ppm; See Photo DSCN0358)
- There was a leaking PRD/conservation vent on D1B GSW Tank (800 ppm; See Photo DSCN0360)
- There appeared to be an open-ended line off the strainer from the D1B CSW tank sump (See smaller line in foreground of Photos DSCN0356 and DSCN0357)
- There appeared to be an open-ended line in the D1G AWN Pit Solvent Room (See Photos DSCN0362 and DSCN0363)

Closing Conference

We briefly discussed the records we had requested during opening conference, as well as the areas of concern noted above. We told the facility representatives that they need to investigate whether the apparently open-ended lines are open-ended or not. We requested repair records for the two leaks we identified. The facility also agreed to write up a facility-wide document stating an internal policy of using 100 ppm (as n-hexane) as the leak definition. We requested calibration logs on the MiniRae PID. The following was received by email on June 1, 2021 (Attachment F):

- D1B GSW Final Repair for Leaks
- Three Years of Subpart BBCC Leaks
- Solvent Waste Profiles
- Calibration Logs
- Subpart BBCC Inspection Job Plan
- 2018 Annual Monitoring
- 2019 Annual Monitoring
- 2020 Annual Monitoring
- 2021 Annual Monitoring
- Facility-wide LDAR Plan

The focused compliance inspection ended at 1620 hours on May 18, 2021. I made a cursory review of the submitted documents and did not find any compliance issues. However, I did not receive any communication on the determination of the open-ended lines in the D1B CSW tank sump and D1G AWN Pit Solvent Room.