

**Statement of Basis  
BASF Corporation  
McIntosh, Alabama  
Washington County  
108-0003**

This proposed Title V Major Source Operating Permit Renewal will be issued under the provisions of ADEM Admin. Code R. 335-3-16. The above named applicant has requested authorization to perform the work or operate the facility shown on the application and drawings, plans and other documents attached hereto or on file with the Air Division of the Alabama Department of Environmental Management, in accordance with the terms and conditions of this permit. The initial Title V Major Source Operating Permit was issued on December 30, 2003 and this is the 3rd renewal. The renewal application was received on August 7, 2020. Additional information was submitted to the department on the following dates: August 14, 2020 and February 18, 2021.

This facility is a chemical production plant with seven individual production units: Area 1 – Granulations, Area 1 – Irgafos, Area 1 – Irganox, Area 17 – Tinuvin, Area 18 – Tinuvin Intermediates, and Area 20 – Additives. These production units collectively produce about 120 products. In addition to the production units, the facility also operates five boilers and a waste water treatment plant (Area 15). The facility is allowed to operate 8760 hours per year unless otherwise specified. Based on the Title V permit application, this facility is a major source of CO, Volatile Organic Compounds (VOC), Hazardous Air Pollutants (HAPs), and NO<sub>x</sub>. There are no ongoing enforcement actions that would necessitate additional requirements to be incorporated into the permit. Washington County is currently listed in attainment with all National Air Quality Standards. .

Changes from the existing permit:

1. Remove Area 1 CSB Unit. This unit has been decommissioned and is being removed from the site.
2. Incorporation of the following Air Permits
  - a. Permit 108-0003-X162 issued on 7/1/2016 to authorize 8,760 hours/year of operation and remove capability to fire comparable fuels for Boiler No. 6.
  - b. Permit 108-0003-X163 issued on 7/22/2016 which incorporates the natural gas fired rental boiler.
  - c. Permit 108-0003-X164 issued on 6/7/2017 which incorporates the hazardous waste boiler, Boiler No. 7.
  - d. Permit 108-0003-X165 issued on 6/7/2017 which includes the hazardous waste storage tanks, UT-V-813 and UT-V-814 as being vented to Boiler No. 7 rather than Boiler No. 6.
  - e. Permit 108-0003-X166 issued on 4/12/2019 which incorporates the installation of a secondary scrubber in the Area 1- Irgafos Manufacturing Unit.
  - f. Permit 108-0003-X167 issued on 1/6/2020 which modified Boiler No. 4's monitoring requirements to align with the requirements of 40 CFR 63 Subpart DDDDD.

- g. Permit 108-0003-X168 issued on 1/23/2020 which reclassified Tank 18-V-29 as a storage vessel.
3. Remove Boiler No. 5 from the No. 5 and No. 8 Boilers section. Boiler No. 5 was decommissioned as part of a PSD Permitting project for Boiler No. 7.
4. Remove baghouse GR-EP-12 from the Granulation Unit section. This baghouse is out of service. The baghouse will remain onsite; however, BASF will submit an application should they plan to repurpose the baghouse.

Each of the individual production units is described below:

### **Area 1-Granulation**

Additive powders and melts manufactured at the McIntosh Plant, other BASF plants, and at outside processors may be packaged in the form it is received or further processed prior to packaging. Further processing in this unit may include blending, granulation, pastillation, extrusion, or other final product forms.

#### Control Equipment

The emission control equipment for the Granulation Unit consists of a Regenerative Thermal Oxidizer (RTO) and 13 baghouses. The powder storage, AO dispersion, surge bins, and extrusion process vent to the RTO. The 13 baghouses are utilized to reduce emissions from blending, bulk bag operations, dump stations, material storage, packaging, form processes, pastillation, and extrusion.

#### Emission Standards

##### *Opacity*

The state opacity requirement would be applicable to the regenerative thermal oxidizer and all baghouses in this unit.

##### *Particulate*

The regenerative thermal oxidizer (GR-EP-01) and the 13 baghouses (GR-EP-02 through GR-EP-11, GR-EP-13 through GR-EP-15) in this unit would be subject to the state process weight curve emission limit for particulate matter.

BASF accepted a limit of 3.40 lb/hr for particulate matter on baghouse GR-EP-15 in order to remain below the PSD significance threshold. This limit was established in Air Permit 108-0003-X119, which was issued on February 21, 2007. The limit was incorporated into the Title V Permit during the first renewal (issued February 3, 2009).

##### *VOC*

BASF has accepted standards for the regenerative thermal oxidizer in order to remain below the PSD significance threshold. These standards require the RTO to maintain a minimum temperature of 1500°F for the destruction of VOCs. These standards were incorporated into the Title V Permit during the initial issuance on December 30, 2003.

### Periodic Monitoring

#### *Opacity and Particulate*

BASF would be required to conduct weekly visible emission checks on emission points GR-EP-01, GR-EP-02, GR-EP-03, GR-EP-04, GR-EP-05, GR-EP-06, GR-EP-07, GR-EP-08, GR-EP-09, GR-EP-10, GR-EP-11, GR-EP-13, GR-EP-14, and GR-EP-15 to ensure they meet the state opacity limit.

#### *VOC*

BASF would be required to continuously monitor the temperature in the regenerative thermal oxidizer and maintain a rolling 1 hour average of at least 1500°F.

The monitoring, recordkeeping, and reporting requirements for these points are included in the permit provisos.

### **Area 1-Irgafos Manufacturing Unit**

This unit is designed to produce IRGAFOS products, which are process stabilizers used primarily as components of blends. Raw materials and solvents are fed to reactors. The reacted mixtures undergo additional processing through some combination of strippers, crystallizers, centrifuges, blenders, and dryers. This product is normally transferred to the Granulations Unit for final processing and packaging or occasionally it will be packaged in the unit as a dry product. Solvents are recovered for reuse in the process and hydrochloric acid is generated as a byproduct of one of the reactions.

### Control Equipment

Control equipment in this unit consists of a packed column caustic scrubber V-47, a water scrubber V-47A, and the Vent Gas Combustor (VGC, IG-EP-01). Process emissions from the absorbers, neutralization vessels, and storage tanks are routed to the packed column caustic scrubber V-47 (IG-EP-01A), which discharges to water scrubber V-47A (IG-EP-01B). Emissions from the water scrubber are then routed to the VGC. Other process equipment which vents to the VGC includes stripping vessels, crystallizers, hold tanks, the centrifuge, storage tanks, distillation vessels, and dryers. The unit also utilizes a pre-condenser in one of the inlet lines to the caustic scrubber. The pre-condenser reduces the VOC content in vapors from the reactor outlet streams and steam jets. It should be noted that the pre-condenser, caustic scrubber V-47, and water scrubber V-47A do not vent to the atmosphere.

### Emission Standards

### *Opacity*

The state opacity requirement would be applicable to the vent gas combustor (VGC) in this unit.

### *VOC*

BASF has accepted emission standards in order to remain below the PSD significance threshold. These standards require the vent gas combustor (IG-EP-01) to maintain 99.9% destruction of VOC or greater and emit no more than 0.35 lb/hr of VOC. These standards were incorporated into the Title V Permit during the initial issuance on December 30, 2003.

### NSPS/NESHAPs

This unit is subject to 40 CFR 63, Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing, and 40 CFR 63, Subpart NNNNN – National Emission Standard for Hazardous Air Pollutants: Hydrochloric Acid Production.

Subpart FFFF requires the implementation of an LDAR program equivalent to 40 CFR 63, Subpart UU – National Emission Standards for Equipment Leaks – Control Level 2 Standards, and all HAP emissions to be reduced by 98% or to an outlet concentration of <20 ppmv.

Subpart NNNNN requires that the unit reduce HCl emissions by 99% or greater or achieve an outlet concentration of 20 ppmv or less. BASF has demonstrated that the caustic scrubber, IG-EP-1A, is capable of reducing the HCl to an outlet concentration of <20 ppmv through performance testing.

### Periodic Monitoring

#### *Opacity*

Should any visible emissions be noted from the vent gas combustor (IG-EP-01), the site will take action within 4 hours to address the problem.

#### *VOC*

To ensure VOC destruction, BASF is required to maintain the vent gas combustor (IG-EP-01) at a minimum temperature of at least 800 °C, as determined by the September 2008 stack test. The caustic scrubber V-47 shall maintain a caustic flow rate  $\geq 65$  gpm and a pH  $\geq 13.2$ , as determined by the September 2008 stack test. The water scrubber V-47A shall maintain a flowrate of 5 gpm, as determined by the July 15, 2019 stack test. When the pre-condenser (IG-EP-01b) is used, the facility will maintain a temperature of  $\leq 17$  °C. As required by §63.2480, BASF has developed an LDAR program in accordance with Subpart UU for all components subject to Subpart FFFF or in VOC service in order to minimize fugitive emissions.

#### *HAPs*

In order to comply with 40 CFR 63, Subpart NNNNN, the facility will follow all monitoring requirements in the NOCS for components subject to Subpart NNNNN.

As a requirement of 40 CFR 63, Subpart FFFF, organic HAP emissions must be reduced by 98%, or to an outlet concentration of < 20 ppmv.

### **Area 1 – Irgafos Storage Tanks**

The following tanks are utilized in the Area 1-Irgafos Production Unit:

Tank Number	Size of Tank (gallons)	Material in Tank
771-V-01	10,000	Volatile Organic Liquid
771-V-02	10,000	Volatile Organic Liquid
771-V-03	10,000	Volatile Organic Liquid
771-V-04	10,000	Volatile Organic Liquid
771-V-05	10,000	Volatile Organic Liquid
771-V-06	30,000	Volatile Organic Liquid
771-V-07	10,000	HCl
771-V-08	6,000	Phosphorous Trichloride
771-V-10	5,000	Volatile Organic Liquid
771-V-11	5,000	Volatile Organic Liquid

### **Control Equipment**

Tanks 771-V-01, 771-V-02, 771-V-03, 771-V-04, 771-V-05, 771-V-06, 771-V-07, 771-V-08, 771-V-10, and 771-V-11 vent to the vent gas combustor (IG-EP-01).

Tanks 771-V-07 and 771-V-08 are vented through caustic scrubber V-47 and water scrubber V-47A before the vent gas combustor (IG-EP-01). The caustic scrubber V-47 shall maintain a caustic flow rate  $\geq 65$  gpm and a pH  $\geq 13.2$ , as determined by the September 2008 stack test. The water scrubber V-47A shall maintain a flowrate of 5 gpm, as determined by the July 15, 2019 stack test.

### ***VOC***

Tank 771-V-04 is subject to Alabama Administrative Code 335-3-6-.03 loading and storage of VOC.

## NSPS/NESHAP

Tanks 771-V-01, 771-V-02, 771-V-05, and 771-V-11 are group two storage tanks, subject only to the reporting and recordkeeping requirements in 40 CFR Part 63, Subpart FFFF.

Tank 771-V-03 is a group 1 storage tank under 40 CFR Part 63, Subpart FFFF. As mentioned above, this tank is vented to the VGC (IG-EP-01) in order to comply with the 95% destruction removal efficiency required by Subpart FFFF.

Tank 771-V-07 is subject to 40 CFR 63, Subpart NNNNN, and is routed to caustic scrubber V-47 and water scrubber V-47A control.

## **Area 1-Irganox Manufacturing Unit (Previously Area 16)**

Additives intermediate, Metilox, is produced in a series of reactors and purified in a series of distillations columns. Additional raw materials are added to the mixture, then it undergoes additional processing in reactors, crystallizers, centrifuges, dryers, and a wipe-film evaporator. Normally this product is transferred to the granulations unit for final processing and packaging, but it may be packaged as a dry powder in the unit. Emissions from this process are vented to the vent gas combustor, VGC (16-EP-11), or through the wet scrubber (16-EP-05). The wet scrubber is a back-up control device which is only in operation when the VGC is down, as such the wet scrubber is limited to 336 hrs/yr (2 weeks/yr) of operation. The mother liquor, which comes off the centrifuges, is sent to a recovery system for the recovery of the solvents. These solvents are recovered for reuse with the only losses occurring in the column bottoms, the evaporator bottoms, and as dilution for high molecular weight organics.

### Control Equipment

The control equipment in the Irganox Manufacturing Unit consists of 6 baghouses, a wet scrubber, and a thermal oxidizer. The reactors, distillation columns, crystallizers, hold tanks, centrifuges, dryers, storage tanks, blenders, and solvent recovery system vent to the vent gas combustor (primary control device) and to the wet scrubber (back-up control device). Equipment vented to one of the five baghouses and dust filter include the hold bins, solids storage silo, rework stations, bulk bag packaging, and drumming stations.

### Emission Standards

#### *Opacity*

The state opacity requirement would be applicable to all baghouses (16-EP-01, 16-EP-03, 16-EP-07, 16-EP-12, 16-EP-13, and 16-EP-14) in this unit.

#### *Particulate*

All the baghouses in this unit would be subject to the state process weight curve emission limit for particulate matter.

### *VOC*

BASF has accepted emission standards that require the vent gas combustor (16-EP-11) to maintain a 99.9% destruction of VOCs and that the VGC maintain a minimum temperature as determined by previous stack testing (currently 1550 °F). These standards were incorporated into the Title V Permit during the initial issuance on December 30, 2003. (During down time for the vent gas combustor, all gases normally vented to it shall be vented to the wet scrubber. Venting to the scrubber shall be limited to no more than 336 hours over a 12 month rolling period, and maintain water flow of  $\geq 30$  GPM when in use in order to maintain 98.0% destruction for VOC.

### NSPS/NESHAPs

This unit is subject to 40 CFR 63, Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing. Subpart FFFF requires the implementation of an LDAR program equivalent to 40 CFR 63, Subpart UU – National Emission Standards for Equipment Leaks – Control Level 2 Standards, and all HAP emissions to be reduced by 98% or to an outlet concentration of  $< 20$  ppmv.

### Periodic Monitoring

#### *Opacity and Particulate*

BASF would be required to conduct weekly visible emissions checks on 16-EP-01, 16-EP-03, 16-EP-07, 16-EP-12, 16-EP-13, and 16-EP-14 in order to ensure compliance with the state opacity limits.

### *VOC*

In order to ensure all anti-PSD and MON limits are met, BASF would be required to continuously monitor the operating temperature and oxygen contents of the gas in the combustion chamber of the vent gas combustor (16-EP-11), and maintain a daily average at or above the values set by initial compliance testing based on at least one reading every 15 minutes.

BASF would be required by 40 CFR 63, Subpart FFFF to implement an LDAR program equivalent to 40 CFR 63, Subpart UU for all components subject to Subpart FFFF or in VOC service in order to control fugitive emissions. The Subpart UU program is split into two units (Irganox and Metilox) as allowed by regulation.

### **Area 1 – Irganox Storage Tanks**

The following tanks are utilized in the Area 1-Irganox Production Unit:

<b>Tank Number</b>	<b>Capacity (gallons)</b>	<b>Material Stored</b>
V-50	35,000	Volatile Organic Liquid
V-51	35,000	Volatile Organic Liquid
V-56	15,000	Volatile Organic Liquid
V-2100	35,000	Volatile Organic Liquid
V-2200	35,000	Volatile Organic Liquid
V-2300	10,000	Volatile Organic Liquid
V-100-501	15,000	Volatile Organic Liquid
V-100-506	15,000	Volatile Organic Liquid
V-100-507	15,000	Volatile Organic Liquid
V-100-510	15,000	Volatile Organic Liquid
V-100-512	15,000	Volatile Organic Liquid
V-100-514	15,000	Volatile Organic Liquid
V-100-518	15,000	Volatile Organic Liquid
V-400-501	15,000	Volatile Organic Liquid
V-400-502	15,000	Volatile Organic Liquid
V-400-504	15,000	Volatile Organic Liquid
V-400-505	15,000	Volatile Organic Liquid
V-400-508	15,000	Volatile Organic Liquid
V-400-509	15,000	Hexanediol
V-400-526	27,000	Volatile Organic Liquid
16-V-15	1,500	Volatile Organic Liquid
16-V-43	35,000	Volatile Organic Liquid
16-V-44	35,000	Volatile Organic Liquid
16-V-45	35,000	Volatile Organic Liquid

Control Equipment



In April 2020, BASF installed a 27,000 gallon storage tank (Tank 16-V-526) and additional piping and instrumentation to allow an increase in storage capacity and production capabilities of the Area 1 – Irganox Manufacturing Unit. Tank 16-V-100-506 is also used for Irganox 1076 storage. Storage tanks 16-V-15, V-100-518, V-400-502, V-400-504, V-400-505, V-400-508, V-2100, V-2200, V-2300, V-50, V-51, and V-56 vent to the vent gas combustor (16-EP-11).

#### NSPS/NESHAP

Tanks V-100-518, V-400-502, V-400-504, V-400-505, and V-400-508 are group one storage tanks, subject to 40 CFR Part 63, Subpart FFFF. As mentioned above, these tanks are vented to the vent gas combustor (16-EP-11) in order to comply with the 95% destruction removal efficiency required by Subpart FFFF.

Tanks 16-V-15, V-400-501, and V-56 are group two storage tanks, subject only to the reporting and recordkeeping requirements in 40 CFR Part 63, Subpart FFFF.

#### **Area 17- Tinuvin Manufacturing Unit**

In Area 17, the Additives Intermediate from Area 18, is reacted with hydrogen in the presence of a catalyst to form the corresponding product. The catalyst is then removed from the reaction mass and the solvents are partially stripped off. The product is then purified, isolated, and dried to the finished form for packaging.

#### Control Equipment

The emissions control equipment in the Tinuvin Manufacturing Unit consists of two flares and two baghouses. The reactors and loading tanks vent to the hydrogen flare (17-EP-27). The equipment that vents to the main flare (17-EP-26) includes the catalyst separators, distillation columns, purifiers, crystallizers, the centrifuge, the dryer, and the holding tanks. The transfer facility and the packaging facility both vent to baghouses (17-EP-25 and 17-EP-49, respectively).

#### Emission Standards

##### *Opacity*

The state opacity requirement would be applicable to both the hydrogen flare and the main flare in this unit and both baghouses.

##### *Particulate*

The baghouses in this unit would be subject to the state process weight curve emission limit for particulate matter.

#### NSPS/NESHAPs

This unit is subject to 40 CFR 63, Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing (MON). Subpart FFFF requires the implementation of an LDAR program equivalent to 40 CFR 63, Subpart UU – National Emission Standards for Equipment Leaks – Control Level 2 Standards. BASF must vent to the existing flares in order to reduce HAP emissions by 98% to comply with the MON.

Periodic Monitoring:

*Opacity and Particulate*

BASF would be required to conduct weekly visible emission checks on baghouse 17-EP-25, main flare 17-EP-26, hydrogen flare 17-EP-27, and baghouse 17-EP-49 in order to ensure compliance with the state opacity limits.

*VOC*

BASF would be required to continuously monitor the flares associated with this production unit to ensure they are lit.

BASF would be required by 40 CFR 63, Subpart FFFF to implement an LDAR program equivalent to 40 CFR 63, Subpart UU for all components subject to Subpart FFFF or in VOC service in order to control fugitive emissions.

It should be noted that BASF is required to maintain an LDAR program equivalent to 40 CFR Part 60, Subpart VV as part of an Administrative Order. By complying with Subpart UU, BASF would be in compliance with this requirement.

**Area 17 – Storage Tanks**

The following tanks are utilized in the Area 17 Production Unit:

<b>Tank Number</b>	<b>Capacity (gallons)</b>	<b>Material Stored</b>
17-V-519	15,000	Methanol
17-V-520	30,000	Volatile Organic Liquid
17-V-523	15,000	Volatile Organic Liquid
17-V-543	15,000	Volatile Organic Liquid
17-V-547	15,000	Methanol
17-V-562	15,000	Volatile Organic Liquid
17-V-37	30,000	Volatile Organic Liquid

17-V-38	15,000	Volatile Organic Liquid
17-V-39	8,000	Volatile Organic Liquid

### Control Equipment

Storage tanks 17-V-519, 17-V-520, 17-V-523, 17-V-543, 17-V-547, 17-V-37, 17-V-38, and 17-V-39 vent to the main flare in Area 17 (17-EP-26).

### NSPS/NESHAP

Tank 17-V-543 is a group two storage tank, subject only to the reporting and recordkeeping requirements in 40 CFR Part 63, Subpart FFFF.

Tanks 17-V-37, 17-V-38, 17-V-519, 17-V-520, 17-V-523, and 17-V-547 are group one storage tanks, subject to 40 CFR Part 63, Subpart FFFF. As mentioned above, these tanks are vented to the Area 17 main flare (17-EP-26) in order to comply with the 95% destruction removal efficiency required by Subpart FFFF.

Tank 17-V-37 is subject to 40 CFR 60, Subpart Kb; however, by complying with the requirements for Group 1 storage tanks under 40 CFR 63, Subpart FFFF the facility is also in compliance with Subpart Kb. This is specifically addressed in 40 CFR 63.2535(c).

### **Area 18-Tinuvin Monoazo Intermediates Unit**

Additives intermediates are produced in Area 18 by diazotizing o-nitroaniline with sodium nitrite in an acidic medium. The resulting diazonium salt is reacted with one of several substituted phenols. The resulting intermediate is separated from the reaction mass and dissolved in a solvent before being transferred to Area 17 for further processing.

### Control Equipment

Control equipment in this unit consists of two scrubbers and a flare. The HCL storage tank vents to a water scrubber (18-EP-21). Some reactors vent to a caustic scrubber (18-EP-14). The equipment which vents to the main flare shared with Area 17 (17-EP-26) includes the reactors, intermediates separators, drying vessel, distillation columns, the tar removal system, and the holding tanks.

### Emission Standards

### NSPS/NESHAPs

This unit is subject to 40 CFR 63, Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing (MON). Subpart FFFF requires the

implementation of an LDAR program equivalent to 40 CFR 63, Subpart UU – National Emission Standards for Equipment Leaks – Control Level 2 Standards.

It is noted that, this unit is also required to comply with 40 CFR 60, Subpart VV - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry as part of an Administrative Order. This unit is considered to be in compliance with Subpart VV by complying with Subpart UU.

### Periodic Monitoring

#### *VOC*

BASF would be required by 40 CFR 63, Subpart FFFF to implement an LDAR program equivalent to 40 CFR 63, Subpart UU for all components subject to Subpart FFFF or in VOC service in order to control fugitive emissions.

#### *HAPs*

BASF would be required to maintain a  $\geq 2$  gpm water flow rate to the water scrubber 18-EP-21 in order to ensure compliance with the MON. 18-EP-14 is considered to be a Group II process vent, as such there are no requirements. For processes venting to the main flare in Area 17 (17-EP-26), BASF would be required to continuously monitor the flare for the presence of a pilot flame in order to comply with the 95% destruction removal efficiency required by Subpart FFFF.

### Area 18 Storage Tanks

The following tanks are utilized in the Area 18 Production Unit:

<b>Tank Number</b>	<b>Capacity (gallons)</b>	<b>Material Stored</b>
18-V-2	30,000	Halogen HAP
18-V-10	15,000	Volatile Organic Liquid
18-V-29	11,000	Halogen HAP
18-V-38	15,000	Volatile Organic Liquid
18-V-47	15,000	Volatile Organic Liquid
18-V-2774	15,000	Volatile Organic Liquid
18-V-2775	15,000	Volatile Organic Liquid
18-V-2778	15,000	Volatile Organic Liquid

### Control Equipment

Tanks 18-V-2, 18-V-10, 18-V-47, 12-V-2774, 18-V-2775, 18-V-2778, and 18-V-38 are equipped with a vapor recovery system. Tank 18-V-2 vents to the water scrubber (18-EP-21). Tanks 18-V-7, 18-V-10, 18-V-47, 18-V-2774, 18-V-2775, 18-V-2778, and 18-V-38 are vented to the main flare in Area 17 (17-EP-26).

### NSPS/NESHAP

Tanks 18-V-2, 18-V-10, 18-V-2781, 18-V-2778, and 18-V-38 are group 1 storage tanks, subject to 40 CFR Part 63, Subpart FFFF. As mentioned above, these tanks are vented to either the Area 17 main flare (17-EP-26) or the water scrubber (18-EP-21) in order to comply with the 95% destruction removal efficiency required by Subpart FFFF.

Tanks 18-V-28, 18-V-2774, and 18-V-2775 are group two storage tanks, subject only to the reporting and recordkeeping requirements in 40 CFR Part 63, Subpart FFFF.

### Area 20-Additives Production Unit

This is a multiproduct, batch processing unit which produces a variety of additives that are used in other finished products. Some of the chemicals produced in Area 20 include light stabilizers, intermediates, and flame retardants. The equipment in Area 20 can serve different functions depending on the product being manufactured. Excluding the solvent recovery area, the chemicals from Area 20 are manufactured using batch processing. The major vessel systems are used for reaction, stripping, purification, solvent recovery, and blending operations. Products from Area 20, in either solid or liquid form, are packaged in drums, totes, or shipped in bulk by way of tank trucks and railcars. Area 20 utilizes a tank farm to store raw materials and some final products.

### Control Equipment

Area 20 has a flare, two scrubbers, and 9 baghouses. The reactors and split tanks vent to the flare (20-EP-26). Other equipment which also vents to the flare includes the crystalizers, filter feed tanks, wet cake blenders, dryers, distillation & evaporation equipment, slurry tanks, bulk loading stations, decanter systems, storage tanks, and the bio-sump. The drop tanks vent to the fume scrubber (20-EP-28). The cyanuric chloride delivery system vents to the caustic scrubber (20-EP-29). The solids packing facility vents to two baghouses (20-EP-S5 and 20-EP-S6). 20-EP-S6 is a trivial and insignificant source. The silo blender and the filter vent to individual baghouses (20-EP-S8 and 20-EP-S4 respectively). The solids charging system is a trivial and insignificant source, which vents to five baghouses (20-EP-S1, 20-EP-S2, 20-EP-S3, 20-EP-S7, and 20-EP-S10). As a T&I source the control equipment associated with the solids changing system is unpermitted and has no requirement.

### Emission Standards

#### *Opacity*

The state opacity requirement would be applicable to the baghouses (20-EP-S4, 20-EP-S5, and 20-EP-S8) and the main flare in this unit.

### *Particulate*

The baghouses (20-EP-S4, 20-EP-S5, and 20-EP-S8), caustic/water scrubber, and fume scrubber in the unit would be subject to state regulation for process weight curve.

### *VOC*

BASF has accepted emission standards in order to remain below the PSD significance threshold. Production of G-19-675 shall not exceed 11.0-MM lbs per rolling 12 month period.

### NSPS/NESHAPs

This unit is subject to 40 CFR 63, Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing. Subpart FFFF requires the implementation of an LDAR program equivalent to 40 CFR 63, Subpart UU – National Emission Standards for Equipment Leaks – Control Level 2 Standards.

### Periodic Monitoring

#### *Opacity and Particulate*

BASF is required to conduct weekly visible emission checks on baghouses 20-EP-04, 20-EP-05, and 20-EP-08 in order to ensure compliance with the state opacity limits.

### *VOC*

BASF is required by 40 CFR 63, Subpart FFFF to implement an LDAR program equivalent to 40 CFR 63, Subpart UU for all components subject to Subpart FFFF or in VOC service in order to control fugitive emissions. BASF also uses the Subpart UU LDAR program to remain minor with respect to PSD.

BASF operates the water flow rate in the caustic scrubber (20-EP-28) at or above 5 gpm, and records the scrubbing liquid flow rate every hour. The caustic liquid flow rate and pH in the caustic scrubber (20-EP-29) are maintained above 10 gpm and 7, respectively, and recorded hourly. BASF also measures the pressure drop of the gas stream across the scrubbers, and records the measurements every hour.

### *HAPs*

BASF is required to monitor the vent stream to the flare (20-EP-26) at least one per hour and continuously monitor the pilot light for the presence of a flame.

BASF is required to maintain records of the lb/day of G-19-675 produced in order to ensure compliance with the 11.0 MMlb/twelve month period limit.

## Area 20 Storage Tanks

The following storage tanks are utilized in the Area 20 Production Unit:

<b>Tank Number</b>	<b>Capacity (gallons)</b>	<b>Material Stored</b>
V-1100	15,000	Volatile Organic Liquid
V-1120	15,000	Volatile Organic Liquid
V-1130	7,500	Volatile Organic Liquid
V-1140	15,000	Volatile Organic Liquid
V-1150	15,000	Volatile Organic Liquid
V-1160	15,000	Volatile Organic Liquid
V-1170	7,500	Volatile Organic Liquid
V-1180	15,000	Volatile Organic Liquid
V-1190	15,000	Volatile Organic Liquid
V-1220	30,000	Volatile Organic Liquid
V-1230	30,000	Volatile Organic Liquid
V-1240	15,000	Volatile Organic Liquid
V-1250	15,000	Volatile Organic Liquid
V-1280	15,000	Volatile Organic Liquid
V-1290	15,000	Volatile Organic Liquid
V-1300	15,000	Volatile Organic Liquid
V-1320	7,500	T-7 Amine
V-1330	15,000	Volatile Organic Liquid
V-1340	7,500	Volatile Organic Liquid
V-1350	15,000	Volatile Organic Liquid
V-1360	15,000	Volatile Organic Liquid
V-1370	15,000	Volatile Organic Liquid
V-3120	30,000	Volatile Organic Liquid
18-V-	15,000	Methanol

### Control Equipment

Tanks V-1100, V-1120, V-1130, V-1140, V-1150, V-1160, V-1170, V-1190, V-1230, V-1240, V-1250, V-1280, V-1300, V-1320, V-1330, V-1360, V-1370, V-1340, V-1290, 18-V-2779 are equipped with a vapor recovery systems which vent to the Area 20 flare (20-EP-26).

### *VOC*

Tanks V-1100, V-1120, V-1130, V-1140, V-1150, V-1160, V-1170, V-1190, V-1280, V-1330, and V-1370 are subject to Alabama Administrative Code 335-3-6-.03 loading and storage of VOC.

NSPS/NESHAP

Tank 18-V-2779 is a group 1 storage tank subject to 40 CFR Part 63, Subpart FFFF. As mentioned above, this tank is vented to the Area 20 Flare (20-EP-26) in order to comply with the 95% destruction removal efficiency required by Subpart FFFF.

Tanks V-1230, V-1240, V-1250, V-1300, V-1360, V-1340, and V- 1290 are group two storage tanks, subject only to the reporting and recordkeeping requirements in 40 CFR Part 63, Subpart FFFF.

Tanks V-1230 and V-3120 are subject to 40 CFR, Part 60, Subpart Kb—Standards of Performance of Volatile Organic Liquid Storage Vessels.

**Natural Gas Fired Boilers**

BASF operates the following natural gas only boilers:

	Rated Capacity
Rental Boiler	99.9 MMBtu/hr
No. 4 Boiler	86 MMBtu/hr
No. 6 Boiler	132 MMBtu/hr
No. 8 Boiler	132 MMBtu/hr

Emission Standards

*Opacity*

All 4 natural gas fired boilers are subject to the state opacity limit found in ADEM Admin. Code R. 335-3-4-.01.

*PM*

All 4 natural gas fired boilers are subject to the state particulate matter limits found in ADEM Admin. Code R. 335-3-4-.03(1).

*SO<sub>2</sub>*

The Rental, No. 4, and No. 8 Boilers are subject to the sulfur dioxide limits found in ADEM Admin. Code R. 335-3-5-.01(1)(a).

*NO<sub>x</sub>*



The Rental Boiler and the No. 4 Boiler are subject to the 40 CFR 60 Subpart Dc NO<sub>x</sub> limit of 0.10 lb/MMBtu of heat input.

The No. 6 Boiler was previously limited to 8,592 hours of operation per year. In July 2016, BASF was issued Air Permit 108-0003-X162, which allowed the boiler to operate a full 8,760 hours per year. The new anti-PSD limits established in this permit are listed in the below.

Pollutant	Emission Limit
PM	4.29 lb/hr
SO <sub>2</sub>	11.75 lb/hr
NO <sub>x</sub>	26.25 lb/hr
CO	10.15 lb/hr

#### NSPS/NESHAP

The Rental Boiler, No. 4 Boiler, No. 6 Boiler and No 8 Boiler are all subject to 40 CFR 63 Subpart DDDDD as Gas 1 category units. These boilers are required to meet the work practice standards in Table 3 of Subpart DDDDD. The No. 4, 6, and 8 Boilers require a tune-up every five years, and the Rental Boiler requires a tune-up annually.

The Rental Boiler and No. 4 Boiler are subject to the 40 CFR 60 Subpart Dc

#### Periodic Monitoring

The rental boiler, No. 4 Boiler, No. 6 Boiler and No 8 Boiler are required to meet the work practice standards in Table 3 of 40 CF 63 Subpart DDDDD, which includes a one-time energy assessment as well as tune-ups every five years.

Pursuant to 40 CFR Part 60 Subpart Dc, BASF is required to maintain fuel usage records in accordance with §60.48c(g) for both the Rental Boiler and the No. 4 Boiler.

#### **Hazardous Waste Boiler 7**

The 143.7 MMBtu/hr Hazardous Waste boiler was permitted on June 7, 2017 to burn liquid hazardous waste that was previously burned in the No. 6 Boiler. The liquid waste was not classified as a hazardous waste at the time it was burned in the No. 6 Boiler.

#### Emission Standards

##### *Opacity*

The No. 7 Boiler is subject to the state opacity limit found in ADEM Admin. Code R. 335-3-4-.01.

*PM*

The No. 7 Boiler is subject to the state particulate matter limits found in ADEM Admin. Code R. 335-3-4-.03(1).

*NO<sub>x</sub>*

In order to remain below the PSD threshold for NO<sub>x</sub>, the No. 7 Boiler has several limitations. Operation of the boiler is limited to 8592 hours per year. When firing liquid hazardous waste in, no more than 83% of the heat input may be derived from liquid fuel. The total NO<sub>x</sub> Emissions from Boiler No. 7 shall not exceed 54 tons per year based on a 12 month rolling total as measured by the NO<sub>x</sub> CEMS. Lastly, in order to offset NO<sub>x</sub> emissions, BASF shall not operate at least one of the following boilers during periods when the No. 7 Boiler is in operation: The No. 4, 6, 8, or Rental Boiler.

*SO<sub>2</sub>*

The No. 7 Boiler is subject to the sulfur dioxide limits found in ADEM Admin. Code R. 335-3-5-.01(1)(a).

NSPS/NESHAP

*40 CFR Part 60, Subpart Db*

The No. 7 Boiler is subject to 40 CFR Part 60 Subpart Db. The NO<sub>x</sub> standard under 40 CFR 60.44b(a)(1) requires that the unit emit no more than 0.20 lb/MMBtu of NO<sub>x</sub> based on a 30-day rolling average. The No. 7 Boiler is not subject to the SO<sub>2</sub> or PM emission limits of Subpart Db because it does not fire coal, oil, wood, or municipal-type solid waste.

As required under 40 CFR Part 60.48b(b), BASF operates a NO<sub>x</sub> CEMS in order to comply with the 30-day rolling average NO<sub>x</sub> emission limit. BASF also keeps daily fuel usage records in accordance with 40 CFR 60.49b(d) and (g).

*40 CFR Part 63, Subpart EEE*

The No. 7 Boiler is subject to Subpart EEE as a new liquid fuel hazardous waste boiler, and the following emission limits under 40 CFR Part 63.1217(b) apply:

Pollutant	Emission Limit	Averaging Period	Test Method
Mercury	1.2X10 <sup>-6</sup> lb/MMBtu	Annual	Feedstream analysis
Combined Cadmium and Lead	6.2X10 <sup>-6</sup> lb/MMBtu	Annual	Feedstream Analysis
Chromium	1.4X10 <sup>-5</sup> lb/MMBtu	Annual	Feedstream Analysis
Carbon Monoxide	100 ppmv	Hourly Rolling	CEMS/Method 10

Hydrocarbons	10 ppmv	Hourly Rolling	Method 25/25A
Combined HCl and Chlorine	$5.1 \times 10^{-2}$ lb/MMBtu	12-Hour Rolling	Method 26/26A, 320, or 321
PM	20 mg/dscm	12-Hour Rolling	Method 5/5I

BASF demonstrates compliance with the carbon monoxide, HCl, and PM emission limits via comprehensive stack testing every 61 months as required by 40 CFR Part 63.1207(d)(1).

Compliance with the hydrocarbon limit was demonstrated via initial stack testing in July 2018. Compliance with the mercury, cadmium, lead, and chromium emissions limits are demonstrated using waste feedstream analysis as provided for under 40 CFR Part 63.1207(m)(2). Additionally, BASF is required to maintain a startup, shutdown, and malfunction plan under this subpart.

In the event that this unit experiences excessive exceedances, meaning more than 10 exceedances in a 60-day block period, the facility is required to conduct an internal investigation into the cause of the exceedances and submit the results to the Department within 5 days of the 10<sup>th</sup> exceedance.

BASF is required to train all control room operators in this unit in accordance with 40 CFR Part 63.1206(c)(6). This requires either the developments of a site specific training program or that operators receive certification from ASME QHO-1-1994, QHO-1a-1996, or QHO-1-2004.

This unit operates an automatic waste feed cutoff system and would continuously monitor the flow rate of hazardous waste. This system would cut off the feed of hazardous waste to the boiler during malfunctions and exceedances in accordance with 40 CFR Part 63.1206(c)(3). This system requires weekly testing.

BASF has developed a feedstream analysis plan as required by 40 CFR Part 63.1209(c), which includes specific parameters used to ensure compliance, how the analysis would be performed, test methods used, and frequency with which testing is performed.

BASF has also developed an emergency safety vent operating plan in order to minimize emissions during ESV opening events in accordance with 40 CFR Part 63.1206(c)(4).

The No. 7 Boiler is subject to the periodic reporting requirements under 40 CFR Part 63.10(d) relating to startup, shutdown, and malfunction and 40 CFR Part 63.10(e) related to continuous emissions monitoring. These periodic reports are submitted to the Department semiannually.

### **Hazardous Waste Boiler Tanks**

BASF routes two existing storage tanks (UT-V-813 and UT-V-814) to Boiler No. 7. Both tanks are 30,000 gallons and are used to store the liquid hazardous waste that is burned in Boiler No.7. This waste has a vapor pressure of 12.0 psia (82.73 kPa).

### **NSPS/NESHAP**

These tanks were constructed after July 23, 1984 and are therefore subject to 40 CFR Part 60, Subpart Kb.

**Emergency Generators**

BASF has a number of emergency generators throughout their production units. The Area 15 Land Vault Sump Generator (15-G-341) is subject to 40 CFR 60 Subpart III. This generator has specific emission limits, and is limited to 100 hr/yr of non-emergency operation. This unit must have a non-resettable hour meter prior to startup in order to ensure compliance.

The following generators are subject to 40 CFR 63 Subpart ZZZZ and are limited to less than 100 hr/yr of non-emergency operation. These units are required to have a non-resettable hour meter installed prior to startup in order to ensure compliance.

<b>Emission Point #</b>	<b>Installation Date</b>	<b>Operating Capacity</b>	<b>Calendar Year Limit</b>	<b>Non-Emergency Use</b>
15-M-33	1988	489 hp	100 hours/year	50 hours/year
CG-396	1999	23 hp	100 hours/year	50 hours/year
CG-343	1997	166 hp	100 hours/year	50 hours/year
439-011	1999	207 hp	100 hours/year	50 hours/year
CG-225	1995	166 hp	100 hours/year	50 hours/year
CG-362	2000	170 hp	100 hours/year	50 hours/year
439-003	1994	88 hp	100 hours/year	50 hours/year
CG-12	1990	141 hp	100 hours/year	50 hours/year
CG-224	1995	755 hp	100 hours/year	50 hours/year
CG-158	1994	277 hp	100 hours/year	50 hours/year
15-G-39	1992	980 hp	100 hours/year	50 hours/year
15-G-236	1978	671 hp	100 hours/year	50 hours/year
CG-393	2002	149 hp	100 hours/year	50 hours/year
15-G-340	1988	671 hp	100 hours/year	50 hours/year
#1 FP	1989	700 hp	100 hours/year	50 hours/year
#2 FP	1989	700 hp	100 hours/year	50 hours/year
#3 FP	1989	700 hp	100 hours/year	50 hours/year
#4 FP	1971	280 hp	100 hours/year	50 hours/year
#5 FP	1975	280 hp	100 hours/year	50 hours/year
#6 FP	1975	280 hp	100 hours/year	50 hours/year
#7 FP	1975	280 hp	100 hours/year	50 hours/year
#8 FP	1971	280 hp	100 hours/year	50 hours/year

**Compliance Assurance Monitoring (CAM)**

This facility currently has no sources which are subject to CAM.

### **Environmental Justice**

ADEM utilized EJSCREEN screening tool to perform an analysis of the area. (see Appendix A).

### **Recommendation**

The renewal Major Source Operating Permit 108-0003 shall be issued with the requirements above pending resolution of any comments received during a 30-day public comment period and a 45-day EPA Review.

## Appendix A- EJSCREEN

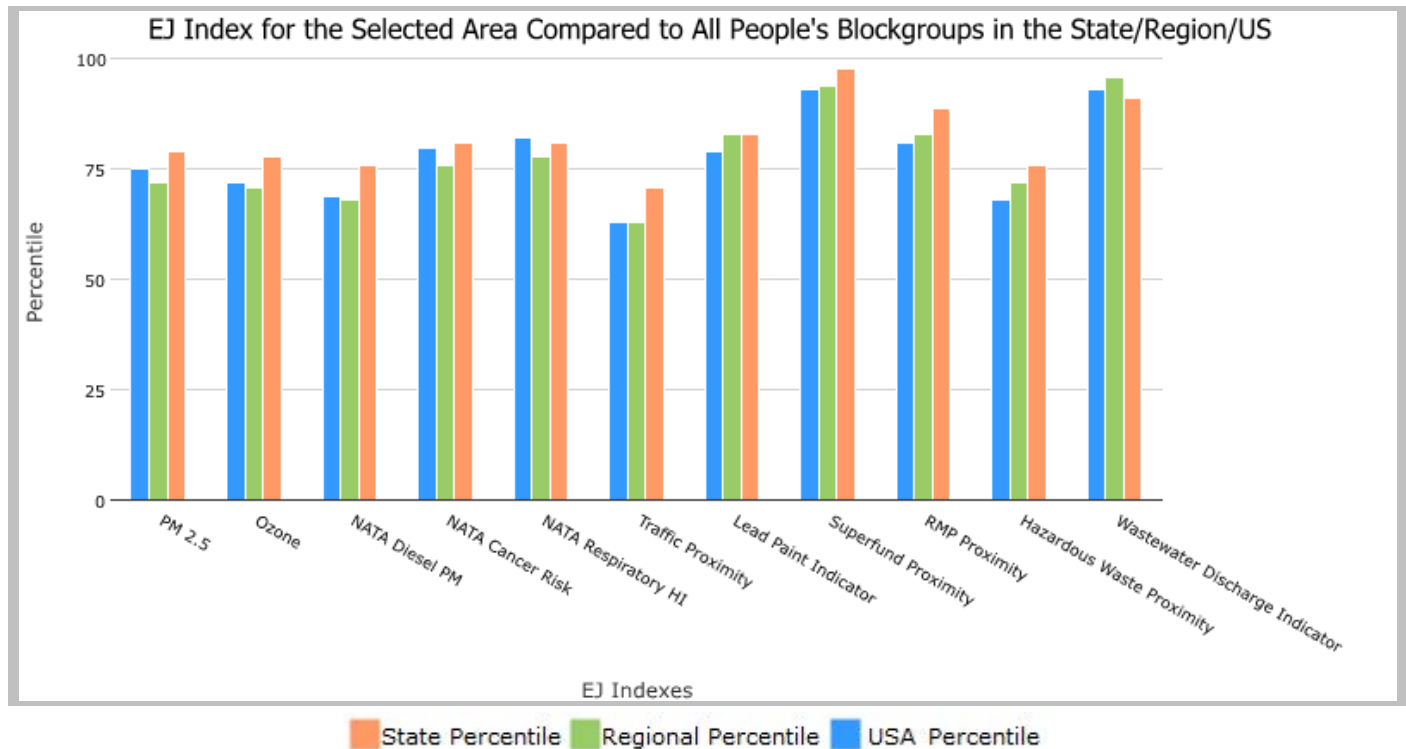
5 miles Ring Centered at 31.274998,-88.008438, ALABAMA, EPA Region 4

Approximate Population: 1,922

Input Area (sq. miles): 78.53

BASF Corporation

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
<b>EJ Indexes</b>			
EJ Index for PM2.5	79	72	75
EJ Index for Ozone	78	71	72
EJ Index for NATA* Diesel PM	76	68	69
EJ Index for NATA* Air Toxics Cancer Risk	81	76	80
EJ Index for NATA* Respiratory Hazard Index	81	78	82
EJ Index for Traffic Proximity and Volume	71	63	63
EJ Index for Lead Paint Indicator	83	83	79
EJ Index for Superfund Proximity	98	94	93
EJ Index for RMP Proximity	89	83	81
EJ Index for Hazardous Waste Proximity	76	72	68
EJ Index for Wastewater Discharge Indicator	91	96	93



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

## EJSCREEN Report (Version 2020)



5 miles Ring Centered at 31.274998,-88.008438, ALABAMA, EPA Region 4

Approximate Population: 1,922

Input Area (sq. miles): 78.53

BASF Corporation

No map available

Sites reporting to EPA	
Superfund NPL	2
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	2



## EJSCREEN Report (Version 2020)

5 miles Ring Centered at 31.274998,-88.008438, ALABAMA, EPA Region 4

Approximate Population: 1,922

Input Area (sq. miles): 78.53

### BASF Corporation

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
<b>Environmental Indicators</b>							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$ )	8.7	9.31	14	8.57	57	8.55	55
Ozone (ppb)	34.6	38	9	38	26	42.9	9
NATA* Diesel PM ( $\mu\text{g}/\text{m}^3$ )	0.228	0.346	34	0.417	<50th	0.478	<50th
NATA* Cancer Risk (lifetime risk per million)	47	43	71	36	95-100th	32	95-100th
NATA* Respiratory Hazard Index	0.76	0.65	83	0.52	95-100th	0.44	95-100th
Traffic Proximity and Volume (daily traffic count/distance to road)	25	220	32	350	24	750	17
Lead Paint Indicator (% Pre-1960 Housing)	0.2	0.18	70	0.15	74	0.28	52
Superfund Proximity (site count/km distance)	0.47	0.054	99	0.083	97	0.13	94
RMP Proximity (facility count/km distance)	0.94	0.41	87	0.6	80	0.74	75
Hazardous Waste Proximity (facility count/km distance)	0.4	0.82	50	0.91	52	5	35
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0.045	1.2	85	0.65	91	9.4	86
<b>Demographic Indicators</b>							
Demographic Index	63%	36%	85	37%	85	36%	85
People of Color Population	84%	34%	90	39%	88	39%	86
Low Income Population	43%	38%	61	36%	64	33%	71
Linguistically Isolated Population	0%	1%	71	3%	51	4%	45
Population With Less Than High School Education	15%	14%	58	13%	64	13%	69
Population Under 5 years of age	0%	6%	5	6%	5	6%	4
Population over 64 years of age	13%	16%	33	17%	39	15%	43

\* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

For additional information, see: [www.epa.gov/environmentaljustice](http://www.epa.gov/environmentaljustice)

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.