

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
**ACTIVITY REPORT: On-site Inspection**

P041364056

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|--|--------------------------------------|----------------------------------|
| <b>FACILITY:</b> INVECAST CORPORATION                                  |                                      | <b>SRN / ID:</b> P0413           |
| <b>LOCATION:</b> 25737 SHERWOOD AVE, WARREN                            |                                      | <b>DISTRICT:</b> Warren          |
| <b>CITY:</b> WARREN  |                                      | <b>COUNTY:</b> MACOMB            |
| <b>CONTACT:</b> Steve Cieslinski , Quality Engineer/Compliance Officer |                                      | <b>ACTIVITY DATE:</b> 08/02/2022 |
| <b>STAFF:</b> Eric Grinstern   | <b>COMPLIANCE STATUS:</b> Compliance | <b>SOURCE CLASS:</b> MINOR       |
| <b>SUBJECT:</b> On-site EJ Foundry Initiative Inspection               |                                      |                                  |
| <b>RESOLVED COMPLAINTS:</b>  |                                      |                                  |

On-site inspection of InveCast Corporation. The facility was targeted for inspection in FY 22 under the statewide initiative evaluating secondary metal processing facilities located in Environmental Justice (EJ) areas. The facility is located in an EJ area using EPA EJSCREEN, based on the population within a one-mile radius of the facility having a Demographic Index and Linguistically Isolated at or above the 75th percentile on a state-wide basis. An on-site inspection was conducted since it has been greater than five years since the last compliance inspection.

Prior to entering the facility, a survey of the area near the facility was made from the public roadway. No odors or visible emissions were observed from InveCast. Vehicles in the parking lot of InveCast were observed to have a substantial amount of fallout. It was later determined that the fallout was resulting from State Street Crushing, which is located south of InveCast.

### **FACILITY DESCRIPTION**

The foundry is a lost wax investment casting job shop that focuses on steel castings for the oil and gas as well as the tool and die industries. The facility has been in operation at the current location since 2011.

The facility currently has approximately 20 employees and operates six days a week (M-Sat.) during two shifts. Melting and casting are conducted during the first shift (05:30 – 15:00).

### **COMPLIANCE EVALUATION**

At the facility, AQD staff consisting of Eric Grinstern (EG) met with Scott Cieslinski, Quality Engineer, and Compliance Officer. Mr. Cieslinski accompanied AQD staff on an inspection of the facility.

The facility currently does not hold any air use permits. Processes at the facility have previously been determined to be exempt from requiring Permits to Install.

The facility is subject to Subpart ZZZZZ, area source iron and steel foundry NESHAP. The facility is a small area source.

Below is a summary of the processes and operations at the facility.

### **MOLD MAKING**

The facility is a lost wax investment casting operation. Wax patterns are produced in seven (7) electric wax injection machines. The wax injection machines appear to be exempt from air permitting under Rule 282(2)(a)(vi). The facility uses a silicon mold release and a wax pattern cleaner in the process. The use of the release was previously determined to be exempt from air permitting via Rule 287(2)(c). The facility documented that they use 544 oz./month, which is less than 5 gallons. The use of the wax pattern cleaner was previously determined to be exempt from permitting under Rule 290. During the previous inspection it was determined that the cleaner contained 77% noncarcinogenic VOCs. Review of the current SDS shows that the cleaner does not appear to have changed. The facility estimated that they use 140 pounds of the cleaner per month, therefore Rule 290(2)(a)(i) appears to be applicable. The facility was reminded of the need to maintain monthly records in accordance with Rule 290. The previous inspection determined that the wax in use contains a small amount of styrene, meeting Rule 290 exemption. The facility provided SDS for the wax as well as monthly usage. The wax contains <0.1% styrene. Considering monthly wax usage of 2881 pounds, monthly styrene emissions would be 2.88 pounds. Styrene emissions of 20 pounds per month is allowed under Rule 290(2)(a)(ii)(B). The ceramic molds are created by dipping the wax patterns in a series of ceramic (zircon/silica) slurries and stucco coating processes. Emissions from the mold making process (slurry build) is controlled by a portable Torit dust collector that vents internally.

After the coating process, the molds are allowed to dry. The facility has a Shellmate brand electric dryer. The small dryer appears to be exempt from air permitting under Rule 281(2)(e).

After drying, the ceramic molds are processed through an electric boilerclave to remove the wax. Emissions from the boilerclave associated with the door opening are vented into the general in-plant air. There is a roof vent directly above the boilerclave.

After wax removal the molds are processed in natural gas-fired kilns. The facility has two (2) kilns. The newer of the two kilns has a heat capacity of 2.05 MMBTU/hr. The heat capacity of the older unit could not be determined but is smaller than the newer unit. The newer kiln has afterburner control, which the facility stated is operated at 1500 degrees F. The older kiln does not have afterburner control. The facility stated that no flash burn-off is conducted in the kilns. The kilns appear to be exempt from air permitting under Rule 282(2)(a)(iii).

## MELTING

The facility produces steel and stainless-steel castings. The facility has two (2) electric induction furnaces, each furnace can either operate with a 100 lb. or 30 lb. capacity crucible. The furnaces appear to be exempt from air permitting under Rule 282(2)(a)(vi). Emissions associated with ladle and crucible ramming are controlled by an internally vented dust collector.

As part of the inspection, the facility was requested and provided melt data for 2021. The facility records show a total of 244 tons of metal poured in 2021. The facility alloys with chromium, nickel, and other alloying elements. The facility supplied data

showed the average chromium content of steel cast in 2021 was 4.2%. The average nickel content was 1.3%.

Furnace charge material consists primarily of spec. ingot. The facility also charges 1010 punching and some internal runaround. The facility has a scrap plan and purchase specs. for punching scrap.

### **POURING, COOLING & SHAKEOUT**

Pouring is manually performed with molds being poured in front of the melt furnaces in sand boxes. Pouring can be conducted from the furnace or a ladle. Pouring does not have a specific capture system, with emissions being emitted to the general in-plant air.

Cooling is conducted in a separate building (quonset hut). Cooling does not have a specific capture system.

Shakeout/knockout is conducted in a contained soundproof room with pneumatic tools/manually. The knockout room was added in 2018. Emissions from the knockout process are controlled by a baghouse with a mechanical precleaner. Observation of the baghouse showed good housekeeping practices, with no collected particulate observed on the ground around the baghouse. The facility stated that the area around the baghouse is evaluated during weekly stormwater inspections. The facility stated that they are in the process of constructing a central collection system for the finishing area. The collection system will have a rooftop baghouse. Knockout was not taking place during the inspection.

### **FINISHING**

The facility has one (1) shotblast unit that is controlled by the same baghouse as the knockout process. The facility has an abrasive cut-off process that is controlled by a baghouse. Additionally, the facility has various cut-off saws, grinders, sanders, etc. that vent to the in-plant air. The facility also has grinders, a sand blaster, and shot blast operations that are controlled by baghouses that vent internally. The finishing operations appear to be exempt from permitting under Rule 285(2)(l). Finishing operations were not being conducted during the inspection.

A heated caustic salt bath (NaOH) is used to remove residual ceramic from the castings. Emissions from the tank are exhausted to the outside air. The salt bath has previously been determined that the emissions do not appear to contain air contaminants that make the process applicable to Rule 201 air permitting.

### **MISCELLANEOUS**

At the time of the inspection, the facility was in the process of installing a 100-kW natural gas-fired emergency generator. The generator had a manufactured date of 2005. Based on the size of the generator, it appears to be exempt from air permitting under Rule 285(2)(g). The generator does appear that it may be subject to NESHAP Subpart ZZZZ. Subsequent to the inspection, staff discussed the potential regulations applicable to the generator and provided guidance documents.

**Subpart ZZZZZ – Area Source Iron and Steel Foundry NESHAP**

The facility is subject to Subpart ZZZZZ and is classified as a small area source.

The facility appears to have submitted the required initial notifications. The facility also submitted the required semi-annual certifications until 2021. The facility submitted the semi-annual certifications for 2021 until current, at the same time they provided the requested facility records.

The facility provided SDSs and records documenting monthly and annual metal throughput, as well as records of usage for sand binders and coatings containing HAPs (attached), as required by the NESHAP.

The requirements of reporting via CEDRI were discussed.

**CONCLUSION**

Based on the information and observations during this inspection, the facility appears to be in compliance at this time with applicable air quality rules and regulations.

NAME Eric GrinsternDATE 9/19/2022SUPERVISOR Joyce