Chapter 11:
Blue Ox Woodworks Example

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11.1 History of Blue Ox Woodworks

In 1954, Otto Walder started Blue Ox Woodworks, a small millwork shop. Otto saw a need to provide good-quality trim and other milled goods to his neighbors in central Minnesota. A former dairy farmer, he named his new company in memory of a favorite blue ox.

The current milling operations included saws, planers, shapers, routers, and sanders. As much as 20% of the wood was being thrown away as waste, so Otto and his employees began collecting the scrap wood and burning it in the boiler to heat the building. Currently, much of the scrap collected during the summer is stored outside until it is needed.

At Blue Ox Woodworks, baghouses collect the sawdust generated by the woodworking operations. The sawdust is also burned in the boiler. There is a diesel generator to provide backup electricity in case of power disruptions.

There is a spray booth with four spray guns that prime, paint, stain, and seal the wood components. Wall filters in the booth control particulate emissions. A steam-heated dryer is used to dry the finished coating. Solvent vapors from the spray booth and the dryer are directed to and then burned in a thermal oxidizer.

Appendix E contains completed facility application forms for Blue Ox Woodworks.

11.2 Description of the Change

With the increasing price of natural gas, Blue Ox Woodworks has decided to build a new boiler to burn sawdust and natural gas.

The new boiler has a capacity of 150 mm BTU/hr, burning natural gas and sawdust. No other changes are planned at the facility.

A completed form CH-01, and modified forms GI-02, GI-03, GI-04, GI-05a, and GI-05b are in Appendix E.

11.3 Emission Calculations

The entire facility is a major PSD source for all criteria pollutants. The entire facility is a Part 70 source (> 100 tpy) for CO, VOC, PM and PM_{10}. The entire facility, due to coating operations is a major HAP source.

Emissions for the modified boiler will be:

	Limited PTE
CO	39.4 tpy
NOx	68.0 tpy
PM	2.7 tpy
PM_{10}	2.5 tpy
SO_2	3.3 tpy
VOC	0.9 tpy
Lead	0.0003 tpy

11.4 Applicability Determination

New Source Review/PSD

The new boiler is a major PSD modification for NOx, and a minor PSD modification for all other PSD pollutants.

New Source Performance Standards (NSPS)

There is an applicable NSPS – Subpart Db. The modification triggers the applicability of NSPS Subpart Db.

Part 61 NESHAP

No Part 61 NESHAP will be triggered.

Part 63 NESHAP

Because Blue Ox Woodworks is a major HAP source, a newly promulgated MACT standard will apply to the boiler. Because the existing boiler is being modified, and not reconstructed, the boiler must meet emission limitations for existing emission units for PM_{10}, HCl, and mercury, and a work practice limitation for CO of 40 CFR § 63, Subp. DDDDD. The boiler would need to be equipped with a fabric filter to meet the requirements of 40 CFR § 63, Subp. DDDDD and 40 CFR § 60, Subp. Db for PM_{10}. The boiler would also need to be equipped with CO and opacity CEMS. Compliance with the HCl and mercury limits of 40 CFR § 63, Subp. DDDDD will be by fuel analysis.

Minnesota Permit Amendment

The proposed changes at Blue Ox Woodworks will require a major permit amendment for a number of reasons. The modification triggers a PSD permit, which is a major permit amendment. The modification will still trigger an NSPS, and there is a newly promulgated Part 63 NESHAP – Subpart DDDDD, which becomes applicable when published in the Federal Register.

11.5 Other Permitting Options Considered/To Consider

If Blue Ox were to eliminate wood firing (solid fuel) in the boiler, and fire with gas only, the modification would still trigger the NSPS, and the newly promulgated Part 63 NESHAP would still apply. However, there would be no emission limitations for PM_{10}, HCl or mercury. There would continue to be a work practice limitation for CO and a requirement to install a CO CEM, but no opacity CEM. There would be no fuel analysis requirements. Eliminating wood would eliminate the requirement for particulate matter control for both the MACT and NSPS standards. A NOx emission limitation would continue to apply from the NSPS standard, and it would be a lower NOx limit (0.10 lb/mm BTU, instead of 0.30 lb/mm BTU burning wood). A NOx CEM will also be installed, although alternative compliance monitoring options are available under the NSPS requirements if only natural gas is burned.

If Blue Ox were able to limit individual and total HAP emissions to below the major HAP source thresholds of 10 tpy for any individual HAP and 25 tpy for any combination of HAPs, then the newly promulgated Part 63 NESHAP would not apply to the modified boiler. In that case, only the NSPS would apply, and if the boiler were limited to gas only, only the NOx standard of the NSPS would apply, and not the PM or SO_2 standards.