One of the primary differences between HNR facilities and ByP facilities is that byproduct ovens operate under positive pressure, such that small openings or cracks in byproduct ovens allow raw coke oven gas and HAPs to leak into the atmosphere. The volatiles and combustion products are collected downstream of the oven chamber and refined in a chemical plant to produce coke oven gas and other products such as tar, ammonia, and light oils.

SunCoke's HNR ovens operate under negative pressure, using induced draft fans that pull air from the outside to oxidize volatile matter and release the heat of combustion within the oven system.[15] Operating the coke ovens under negative pressure virtually eliminates the risk of leakage of coke oven emissions through doors or other potential leakage points. Openings or cracks in the ovens simply allow additional air to be drawn into the oven as part of the carbonization process. Coal volatiles are combusted within the HNR oven system, unlike at ByP facilities, where the byproducts are recovered in a downstream chemical plant. This combustion generates heat, which is used to complete the coking cycle and, at heat recovery facilities, the remaining heat is recovered in HRSGs and used to produce electricity or process stream,

SunCoke's ovens are not sources of leaking coke oven emissions, with the exception of limited door leaks, which EPA recognized "are so infrequent and of such short duration that the annual emissions are orders of magnitude below those from door leaks on by-product batteries, which occur on a continuous basis."[16] EPA further stated that it did not "anticipate any adverse public health or environmental impacts due to emissions from charging and coke oven doors at non-recovery batteries." 69 Fed. Reg. 48337, 48344 (Aug. 9, 2004).

The equipment used by the two types of facilities is also different because of the difference in the design and operation of the ovens. SunCoke charges its HNR ovens from the side using a PCM, whereas ByP ovens charge from the top using a larry car. At an HNR facility, coke is pushed out of the ovens into a hot car, controlled by either a multiclone or a shed enclosure, whereas ByP facilities use hot cars controlled by baghouses or other devices. EPA accounted for the difference in these control types in the original MACT standard. *See* 58 Fed. Reg. 57898, 57899 (Oct. 27, 1993). Byproduct ovens, as EPA notes, are smaller in width than heat recovery ovens. 88 Fed. Reg. at 55863. The difference in pushing control technologies is due to the size and layout of the coke oven batteries, as further described in Section IV.

The differences in operations mean differences in emissions and, while EPA accounted for these differences in the original MACT standard, it ignored them in the Proposed Rule. One of the more egregious examples was failing to account for the fact that the annual emissions from HNR facilities (in EPA's own words) "are orders of magnitude below those from door leaks on by-product batteries, which occur on a continuous basis." *See, e.g.*, Sections XI.A.1, XII. The below chart further illustrates differences in emissions (here, benzene and PAH) between heat

[15] While Jewell does not have induced draft fans, it uses natural draft to pull air from the outside to oxidize and fully combust volatile matter and release the heat of combustion within the oven system. Similar to SunCoke's heat recovery plants, Jewell also operates under negative pressure; openings or cracks in the ovens simply allow additional air to be drawn into the oven system.

[16] EPA, *National Emissions Standards for Coke Oven Batteries: Background Information for Final Amendments*, at 21 (Mar. 31, 2005).