



## All About...Coal Combustion By-Products

### Introduction

The Northern Indiana Public Service Company (NIPSCO) supplies electricity to the Town of Pines and much of northwest Indiana. The nearby Michigan City Generating Station, which is owned and operated by NIPSCO, uses coal as its energy source for the production of electricity. The burning of coal at any generating station results in “coal combustion by-products,” or “CCBs.”

Pines Update Issue #1 provides information about two Administrative Orders on Consent (AOCs) entered into by NIPSCO, Brown Inc. (Brown), and the US Environmental Protection Agency (USEPA). AOC II specifies that an investigation of the potential impacts of CCBs will be conducted within a defined “Area of Investigation.” Pines Update Issue #2 discussed the strategy for investigating CCBs in the Area of Investigation. This update (#3) provides information about CCBs, and the potential presence of these materials in the Area of Investigation.

### What are CCBs and where do they come from?



Coal-burning power plants supply more than half of the electricity used in the United States.

The burning of coal to produce electricity results in unburned “coal combustion by-products.”

Generally, there are four types of CCBs. Their classification is based on how and when each is generated in the coal combustion process.

“**Bottom ash**” and “**boiler slag**” settle to the bottom of the main combustion chamber (the boiler) in the coal burning process. These CCBs are similar to the ashes left behind in a fireplace or an outdoor charcoal grill. Bottom ash is typically a gray or black, coarse material. Boiler slag is similar to bottom ash, but it is material that has melted during the burning process. Boiler slag is collected at the base of the boilers and is quenched with water. This causes it to shatter into black, angular pieces that have a smooth glass appearance.

“**Fly ash**” is ash that exits the combustion chamber in the flue of the boiler and is collected prior to being released into the air. This CCB is similar to the small particles that exit the chimney when a fire is burned in a fireplace or fly upward off a campfire. Fly ash is a fine powder and is generally light tan in color. It consists mostly of very small-sized glassy spheres. Its consistency is somewhat like talcum powder.

“**Flue Gas Desulfurization products**” result from the treatment of air in the flue of the boiler. When coal is burned, sulfur dioxide is released; this gas is often removed from the air in the flue of the boiler before the air reaches the atmosphere.

### What happens to CCBs – where do they go in the environment?

There are beneficial reuses for CCBs, such as roofing granules, blasting abrasives, waste stabilization, and as a replacement for Portland cement in concrete. CCBs that are not reused are typically disposed at regulated, solid waste disposal facilities.

### Which types of CCBs were produced by the Michigan City Generating Station?

Two types of CCBs were likely produced by the Michigan City Generating Station: fly ash, and boiler slag. Flue gas desulfurization materials were not produced because the Generating Station did not (and does not currently) use desulfurization equipment in its burning process. Bottom ash was not produced because the Generating Station used cyclone units to burn coal, which do not produce bottom ash – instead, cyclone units produce fly ash and boiler slag.

### Which types of CCBs are relevant to the Town of Pines?

A review of available information about the ultimate re-use or disposal of CCBs from the Michigan City Generating Station suggests that most CCBs were legally disposed at the permitted Restricted Waste Facility known as Yard 520. The types of CCBs that may have been legally used as road bed by the Town of Pines or as fill by residents and others is not exactly known, but

---

could be fly ash, bottom ash/boiler slag, and/or a mixture.

### ***How did the CCBs get from the Generating Station to the Town of Pines?***

Management of CCBs at the Generating Station was performed consistent with industry and regulatory standards. Fly ash was collected from gas in the stack in emission control devices (such as electrostatic precipitators). Prior to 1998, CCBs were flushed from these systems using water. The mixture of water and CCBs was piped to settling ponds at the plant. In the settling ponds, the CCBs were allowed to settle out of the water. Approximately twice a year, the settling ponds became filled to capacity with CCBs. At that point, the CCBs were removed from the ponds and either disposed or reused. Some of this CCB material was disposed at Yard 520, and some may have been re-used in the Town of Pines. There may have been occasions when fly ash was mixed with other CCBs in the ponds.

In 1998, the Michigan City Generating Station switched to a system that managed the CCBs in dry form.

### ***Was the disposal or reuse of CCBs illegal?***

No. Yard 520 is a permitted Restricted Waste Facility. It was authorized by the Indiana Department of Environmental Management (IDEM) to accept CCBs.

Further, the use of CCBs as fill and roadbed in the Town of Pines is not believed to have been illegal at the time. Indeed, even today CCB is commonly used as road base material and as a component in flowable fill.

Filling activities within the town were not performed by Brown or NIPSCO. It is not known who was responsible for the filling.

### ***Are CCBs a hazardous waste?***

No. Hazardous wastes are those identified and regulated by Subtitle

C of the Resource Conservation and Recovery Act. CCBs are not one of these wastes.

### **Our Commitment....**

NIPSCO and Brown are committed to keeping you informed on the progress of the municipal water service extension and the investigation of the Pines Area of Investigation. Look for future *Pines Updates* (such as this one) to update you to our progress.

We've also developed a mailing list for the site. Please contact the Communications Coordinator at the address listed below to be placed on the mailing list.

**Communications Coordinator  
Brown, Inc.  
720 W. US Hwy 20  
Michigan City, IN 46360**

---

Communications Coordinator  
720 W. US Hwy 20  
Michigan City, IN 46360

CH2\1149993.1