History of Bay Harbor and East Park

What is Cement Kiln Dust, more commonly referred to as CKD, and why is it a concern?

The process of making cement involves grinding limestone with other raw materials into a fine powder that is heated in a kiln at very high temperatures. The leftover material or waste that is produced during this cement manufacturing process is cement kiln dust.

When water comes into contact with the CKD, it can leach substances from the CKD and potentially contaminate adjacent waters. This leachate can have high pH and can contain heavy metals such as mercury, arsenic, and lead, which pose adverse impacts to water quality, fish and other aquatic life, and, potentially, human health with direct contact.

pH is a measure of hydrogen ions which measures the acidity or alkalinity of water. The pH scales ranges from 0-14, low values being acidic, high values alkaline, and 7 being neutral. The pH readings of the leachate along the impacted shoreline of Little Traverse Bay ranged between 9 (which is considered the safe alkaline level for humans) and 13.6.

The current site of Bay Harbor and East Park was once home to mining operations and cement manufacturing. Cement production within our community dates back to 1917 with the formation of Petoskey Portland Cement Company. In 1954, the Penn-Dixie Cement Company purchased the land and continued operations until 1980. Throughout the years of cement manufacturing, an estimated 2.5 million cubic yards of CKD waste were left behind on the property which was common practice. The 2.5 million cubic yards of CKD left behind is the equivalent of 2,343 football fields covered with six inches of snow.

In 1980, Penn-Dixie filed for bankruptcy and the land and cement plant was purchased by Dundee Cement Company. With the change in ownership, the quarry and plant remained closed and the facility was simply used as a transportation center. Dundee Cement Company sold a portion of the land to Bay Resort Properties Ltd. becoming a limited partner in proposed future development.

During the entire history of the site, up until the Bay Harbor development began, the piles of CKD were for the most part exposed to the environment. Leachate created from rain and ground water running through the piles was not monitored and may have seeped into Little Traverse Bay. Neither Bay Harbor Company nor CMS was involved in the manufacture of cement or the operations of those activities at what is now the area of Bay Harbor.

In January of 1987, the headline of the Petoskey News Review began to tell the story of a new proposal for the site with a $500 million resort planned. The resort, later named Three Fires Pointe, was proposed to be located at the Dundee Cement plant property. All was going smoothly until October 1988 when an individual searching for Petoskey stones came across a discharge of water underneath a CKD pile that he thought might be contaminated.

In 1988, the Michigan Department of Natural Resources (MDNR), and what is now the Michigan Department of Environmental Quality (MDEQ), received citizen complaints about reddish colored seepage entering Little Traverse Bay from the base of two cement CKD piles located on the Dundee Cement Company site. As a result of the complaints, the MDNR Surface Water Quality Division conducted testing of cement kiln dust samples throughout the year.

A chemical assessment of kiln dust solids and seeps at the defunct Dundee Cement Company site was conducted

on June 20, 1989. The investigation included two CKD piles: one located east and the other west of the cement manufacturing facility. The data from the monitoring indicated that both CKD pile samples and the associated seeps showed detectable concentrations of arsenic, chromium, copper, lead, nickel, selenium, and zinc. In addition, the lead and nickel concentrations in the west seep and the copper and lead concentrations in the east seep exceeded Michigan's Water Quality Standards. Included in the conclusions of the MDNR report is a finding that the source of elevated metals, total dissolved solids, alkalinity and pH in the west seep was most likely due to influence by the cement kiln dust deposits.

While the heavy metals in the seepage were never directly linked to the cement kiln dust, the same metals identified in the leachate were also identified within the cement kiln dust. However, MDNR analysis of the cement kiln dust indicated that it was not capable of releasing heavy metals at concentrations of concern. As a result, on June 15, 1989, the MDNR granted a designation of inertness for the cement kiln dust located on the property. This meant that CKD could be disposed of in a shale quarry to become a golf course and was not perceived to be able to pose a threat to the environment or public health. However, a provision was also included that stated the designation would become immediately void if "additional information demonstrates the designated material is not inert" or "causing environmental contamination."

CMS had loaned money to the developers who planned to create Three Fires Point. The Three Fires Point developers used the money to purchase the 300-acre site on which the cement plant was located. This parcel divided larger tracts to the east and west upon which the CKD piles were located. After the Three Fires Point developers defaulted on the loan, CMS purchased this central 300 acres at a Sheriff's sale. In 1993, Bay Harbor Company teamed up with CMS Land Company, a subsidiary of CMS Energy, to develop the site. The remaining parcels to the east and west were purchased from Holnam (previously named Dundee) by Bay Harbor Company in June 1994. A Covenant Not to Sue was negotiated and signed on July 11, 1994 between Bay Harbor Company, CMS, Boyne USA, and the State of Michigan and its Department of Natural Resources. Pursuant to applicable Michigan statutes, Covenants Not to Sue were and are issued by the State to encourage developers to rehabilitate properties that are considered blighted and might otherwise not be developed.

At the request of organizations such as Tip of the Mitt Watershed Council and concerned residents, the MDNR continued to conduct testing on the leachate seeping from the CKD piles. Although the concentration of some contaminants in the leachate was found to be above the standards set for water quality, it was below the standards set by Michigan's contaminated site law.

In addition, numerous DNR investigations concluded that groundwater and surface water were observed entering the shale quarry, what is now the Bay Harbor Golf Course, which was destined as the disposal site for CKD. Based upon these investigations, staff for the DNR recommended that in order to minimize water contact with the cement CKD, the utilization of gravity drains, sediment basins and capping materials may be necessary. Despite the recommendations provided by DNR staff, the agency's final position was that the site specific "Designation of Inertness" only required that the CKD was to be covered with six inches of soil that could support vegetation. In reliance upon this requirement, the site was remediated as required by the then applicable law.

Beginning in 1994, and pursuant to the terms of agreements with the state and approvals by applicable governmental agencies, the area where the cement kiln dust piles are located was developed into a resort and golf course. The transformation was rapid. In 1994, simultaneous explosions demolished the cement plant smokestacks. Eight months later, the barrier between Bay Harbor and Little Traverse Bay was removed, and water rushed in at the rate of one-million gallons per minute. Within 24 hours, over 2.5-billion gallons of water formed Bay Harbor Lake.

Despite significant improvements to the area, there was evidence that leachate was coming from the largest pile of cement kiln dust, what is today considered to be Seep 2, and entering Little Traverse Bay. While not required by law, the Covenant Not to Sue had a provision to address a portion of the contamination that was visible from the

shoreline. As a result, a CKD seepage collection line was installed in 1997 by Boyne USA, with oversight and guidance by the MDEQ and the developers, to prevent the leachate from reaching the water. The collected leachate was then transported to the City of Petoskey. In 2003, CMS constructed a pre-treatment plant to adjust the pH of the CKD leachate collected. The treated leachate was then delivered to the City sewer by a newly constructed discharge line. Due to complications that caused the plugging of a line within the treatment facility, the facility was shut down on January 2, 2004 allowing some leachate to drain directly into Little Traverse Bay.

During a routine inspection at the Petoskey Wastewater Treatment Plant on August 17, 2004, the MDEQ determined that seep water had not been collected and discharged to the Petoskey Waste Water Treatment Plant since the turn off. As a result, investigations were conducted regarding seep discharges into Little Traverse Bay. The seep discharges for pH, arsenic, copper, mercury, nickel, selenium, and zinc exceeded Michigan Water Quality Standards promulgated since 1994.

It should be noted that Michigan water quality standards continuously undergo evaluations and changes that reflect the science of the time. The concentrations of metals that exceed water quality standards can vary over time due to amendments in our laws. Advances in the field of toxicology and the knowledge and understanding of toxic substances that were rapidly expanding at the time resulted in stricter standards for toxic discharges to water bodies. In addition, to keep up-to-date with current science, the standards require periodic review and revisions. Water quality standards can vary according to specific criteria and use. Therefore, the water quality standards vary for drinking water, human contact, and aquatic health.

Further investigations on the leachate were conducted. Based upon the findings, officials from the Northwest Michigan Community Health Agency issued a Public Health Advisory on September 3, 2004 instructing people to avoid certain areas near the shoreline along Bay Harbor, two to three miles west of the Village and Marina. The Advisory was issued due to concerns about the potential health risks associated with exposure to the dangerous alkalinity (high pH) levels along isolated shorelines. The Public Health Alert was further extended to encompass four areas, bringing the total length of restricted shoreline to over one mile. The expansions of the health advisory were due to the identification of new seeps of highly caustic discharges from waters from CKD.

Recognizing that a problem existed, the Little Traverse Bay Bands of Odawa Indians voiced concern about the contamination of Lake Michigan and the associated natural resources that hold great historical and cultural significance to tribal members. Through treaties and decrees between the federal government and the Tribes, the federal government holds a trust and responsibility to protect tribal rights. With a threat associated with the aquatic toxicity of the release, a threat to human and environmental health, and a threat to the fisheries, tribal interests prompted the United States Environmental Protection Agency (EPA) to step in and investigate the problem.

Upon investigating, the EPA determined that a problem existed posing an immediate threat to the waters and possibly public health. As a result, the EPA issued notification of potential liability to the developers of the property in an attempt to find the party responsible for remediation of the contamination. Although CMS sold its interest in Bay Harbor in 2002, CMS retained environmental responsibility for the site and has taken the responsibility for correcting the issue.

An agreement was reached on February 22, 2005 between the US EPA and CMS. The administrative order on consent required CMS to take immediate steps to control releases from the cement kiln dust piles.