



**FOR IMMEDIATE RELEASE**

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**CONTACT:**

Diane Wetherington

Intertox

(425) 503-4040

dwetherington@intertox.com

**Intertox study concludes that mercury emissions from proposed Carolinas Cement plant pose nominal risk for local population**

SEATTLE, Wash. – Intertox, a Seattle-based toxicology company, has concluded that the mercury emissions from the proposed Carolinas Cement Company (CCC) plant in Castle Hayne will pose nominal risk to the public health of the Greater Wilmington community. The firm recently completed an independent, peer-reviewed mercury study launched in September 2008. Carolinas Cement paid for the study, but was not privy to the study's findings during the process. Carolinas Cement received the findings the same day they were released to area media.

“Our study concludes that the total estimated dose of mercury a typical resident of Castle Hayne and the Greater Wilmington community could encounter is less than the concentration of mercury in 1 3/4 teaspoons of canned lite tuna fish per month,” said Richard C. Pleus, Ph.D. Director of Intertox. The total estimated dose includes mercury levels from any type of contact – eating fish or produce, drinking water or breathing.

“It is clear from this assessment that the greatest exposure from mercury emissions is via consumption of mercury in fish,” said Pleus. “The contribution from other pathways – such as breathing the air and drinking the water – is less than 2% of the estimated risk.”

The assessment also concluded that even **without** the presence of Carolinas Cement, a population defined as subsistence fishers and their children are currently at risk because of their high levels of fish consumption from the North East Cape Fear River (NECFR). Some of these individuals are eating in excess of 19 portions of fish per week, well above the North Carolina fish advisory. With the presence of Carolinas Cement, if those individuals who are already eating 19 portions of fish per week reduced their consumption to adhere to the state guidelines, they would reduce their dose below the EPA reference dose for methylmercury considered to be protective of human health.

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## Study Methodology

The Intertox study measured how the Carolinas Cement mercury emissions would affect adults and children by using a multipathway human health risk assessment (MPHHRA) model. The MPHHRA assesses how people could be exposed to mercury through various pathways, such as eating, breathing, drinking and skin contact. The Intertox study was based on mercury concentration models for fish in the NECFR developed by Entrix, Inc. of Houston, Texas and plant specific mercury airborne models developed by Environmental Quality Management, Inc. of Cincinnati, Ohio.

To supplement the modeling data, Intertox conducted 400 phone surveys of area residents to determine fish consumption figures from the NECFR. They also conducted 100 in-person surveys of fishers who were actively fishing on the NECFR.

The goal of any MPHHRA is to estimate the greatest risk to public health, always erring on the side of caution. Therefore, Intertox based its study calculations on the maximum potential to emit of 263 pounds of mercury per year, as estimated in Carolinas Cement's air permit application. The location Intertox selected as the basis for the study – referred to as reasonable maximum exposure (RME) – is at the CCC property line at the junction of the Northeast Cape Fear River and Island Creek. Any other potentially habitable off-site location would have risks that are lower than the RME. No one lives at the RME site or is expected to live at the site.

For the purpose of the study, Intertox created three hypothetical resident groups who live at the RME site on the plant grounds for their entire lifetime:

1. **Subsistence farmer and child** – they eat produce, beef, pork, chicken and eggs raised on site; they drink milk from cows raised on site; breathe air from the site and drink water from the NECFR.
2. **Subsistence fisher and child** – their primary protein source is fish caught only in the NECFR. They eat some produce grown on site, breathe the air from the site and drink water from the NECFR.
3. **Resident and child** – they purchase most of their food from grocery stores, and supplement their diet with some site-grown produce and fish caught in the NECFR. They drink water from the NECFR and breathe the air from the site.

To determine the risk to the three groups, Intertox compared potential mercury exposures at the RME site to the EPA reference doses (RfDs) for mercury. An RfD is an amount that a person can ingest every day for the rest of his or her life and still not suffer any adverse health effects. The EPA definition of an RfD is “an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive sub groups) that is likely without an appreciable risk of deleterious effects during a lifetime.” (IRIS, 2001) RfDs are conservative in nature as they are intended to provide a margin of safety that is protective to all people.

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## Study Findings

Assuming the 263 pound emission scenario, Intertox has estimated that if a hypothetical resident, subsistence fisher or subsistence farmer lived at the CCC property line, they would not be expected to suffer any adverse health effects due to mercury exposure from the CCC facility. This is true regardless of whether they ate produce and livestock grown at this location, ate fish from the NECFR, or just lived, breathed, and drank untreated water in this location.

Intertox also concluded that subsistence fishers and their children, based on the assumptions made for this population group, are currently at risk given their high levels of fish consumption above and beyond the North Carolina Fish Advisory. The Intertox phone survey found that of the people who regularly eat fish or shellfish more than once a month, 8.5% reported eating fish from the NECFR. The Intertox in-person survey found that of the people who were actively catching and eating fish from the river, 35% reported eating more portions per week than recommended in the N.C. fish advisories. Based on these findings, the subsistence fisher was assumed to eat 19 portions of fish per week from the NECFR.

“The addition of the Carolinas Cement facility does not place this group of subsistence fishers at substantially greater risk for adverse health effects,” said Pleus. “However, this group’s exposure to mercury, with or without Carolinas Cement, could be brought within safe levels by helping them to make better dietary choices. Community leaders and agencies could greatly benefit this population by working with families on alternative diets, especially diets for subsistence fisher pregnant women and their children.”

In summary, Intertox concludes that the maximum amount of mercury that may be emitted (263 pounds per year) is not expected to adversely affect the health of the community. Adults and children who live, work, or go to school nearby are not expected to suffer any adverse health effects from increased environmental mercury due to emissions from the proposed CCC facility.

### **Peer Review**

After completing the multipathway risk assessment, Intertox conducted a peer review following National Academy of Sciences guidelines to determine whether its findings are conservative and appropriate. In selecting the four-member peer review panel, Intertox identified scientists who are experienced in human health risk assessments, have toxicology backgrounds, and are experts in one or more areas of importance to the study – mercury in humans and fish.

In accordance with peer review protocol, all reviewers’ comments must be noted in an anonymous fashion. Detailed below are select comments (a complete list of peer review comments are available in the full report):

- “The levels of conservatism built into the model (e.g. assuming the consumption of raw, untreated surface water) border on the extreme, but this is exactly as it should be in a screening level risk assessment.”
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- “The conclusion that the very small increases in mercury emission predicted from the proposed facility will pose little to no risk to human health or residents in the area is justified and scientifically defensible.”

- “The use of EPA reference doses (RfDs), as Intertox has used, are the most appropriate and health protective dose estimate related to conducting a mercury risk assessment. The RfD includes a safety factor for individual differences in risk.”
- “. . .the surveys have revealed the possibility that there exists a small population of subsistence fishers in the area. As such, this small population may currently have a slightly elevated risk as a result of consumption of fish in quantities greater than the NC recommended fish consumption advisories. Whether this is due to lack of public education of these guidelines or just disregard of the advisories is unknown. . . Clearly, consumption of fish in quantities recommended by the State of N.C. would not be expected to result in any increased adverse health effects as a result of the proposed facility.”

### **Recommendations**

To supplement its study findings, Intertox has developed the following recommendations for Carolinas Cement:

- **Educate Public on North Carolina Fish Advisories**  
The Intertox study found that a very small segment of the local population is eating quantities of fish in excess of the NC fish advisories. Intertox recommends that CCC work to help educate the community about the importance of following these advisories. In preparation of this report, Intertox reviewed the scientific basis of the fish advisories and found them to follow generally accepted practices of public health.
  - **Conduct Air and Water Monitoring**  
Intertox recommends a voluntary annual monitoring of air and water mercury emissions in the Castle Hayne area, with the results made public. Please note that monitoring mercury levels away from the origin of emissions can present some technical challenges such as how to allocate measured levels between local and global emission sources.
  - **Form a Citizens’ Advisory Board**  
A Citizens’ Advisory Board (CAB) would provide a forum to work with Carolinas Cement to address issues of concern to the community. A cooperative effort among the CAB, CCC and local community leaders would ensure an open dialogue and quick resolution to issues as they arise.
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- **Develop a Health and Safety Contingency Plan for New Hanover County School District**  
Intertox proposes that CCC work with the New Hanover County School (NHCS) District to develop a Health and Safety Contingency Plan. Although the proposed facility will be designed with and operated under strict environmental controls and safety measures, the plan will outline actions to be taken in the unlikely event of an accidental release of high emissions for a brief period.

- **Consult a Physician if concerned about mercury sensitivity (allergy)**  
For those people concerned about whether they might have allergic reaction to mercury, a patch test conducted by a physician will provide appropriate information.

### **About Intertox**

Intertox is a scientific consulting and research firm whose mission is to achieve long-term solutions to enhance and manage public health risk issues. Founded in 1995 and headquartered in Seattle, Washington, Intertox is comprised of scientists with expertise in toxicology, pharmacology, epidemiology, environmental chemistry, nanotechnology and regulatory policy. Intertox combines objective, strategic thinking with cutting-edge scientific research to evaluate risks posed by chemical and biological agents affecting human health. For more information, visit [www.intertox.com](http://www.intertox.com).

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*Note to editor: Additional press materials, charts and a copy of the full toxicology report on Carolinas Cement are available for download from the Intertox FTP site. Below are 3 ways to access the FTP server.*

1. You can connect using Internet Explorer via the link below:  
<ftp://Intertox:April@Files8.cyberlynk.net>  
This will allow for dragging/dropping capabilities on any windows machine.
2. You can also connect to the FTP server using any standard FTP Client such as FTPVoyager, WSFTP, or CuteFTP. To connect using your FTP Client use the settings below.  
FTP Host: Files8.cyberlynk.net  
Username: Intertox  
Password: April  
If you do not have an FTP client you can purchase or download a FREE trial copy via the link below:  
<http://www.ftpclientlisting.com>
3. You can also use the Web Based JAVA FTP Client from any Windows computer:  
<http://Files8.cyberlynk.net/client>  
Username: Intertox  
Password: April