

Questions & Answers about the November 2015 Fish Kill in Middle River Waterways

Q: A massive fish kill occurred in upper Middle River, Norman Creek, Hopkins Creek and Dark Head Cove in mid-November 2015. Is Lockheed Martin responsible?

A: No. We are aware of what happened and are concerned, as are members of the community. From the outset, we have been supporting the state and the local community in requests they have made for assistance in their investigations. The Maryland Department of the Environment (MDE) has stated, based on preliminary results of sampling conducted in the course of its investigation, that the cause of the fish kill was a toxin released by dead algae that caused the fish to suffocate. This particular algae, called *Karlodinium veneficum*, is present all the time in the upper Middle River. The MDE confirmed that its water samples from the Middle River showed that the presence of the algae was high enough to produce the toxin. The department has also stated that an average of three fish kills per year are attributed to karlotoxin or karlotoxin in combination with low dissolved oxygen. This is also commonly known as Red Tide.

Q: What causes the algae blooms?

A: According to the Maryland Department of the Environment in its Nov. 14 press release, algae blooms occur all around the bay in late spring, summer and early fall. Vince Gardina, the director of Baltimore County's Department of Environmental Protection and Sustainability, was quoted on Nov. 18 by <http://www.abc2news.com> as saying that, "all these algae blooms are caused by increased nutrients that we have as a result of pollution." "The real culprit in fish kills," he states, "is water pollution from stormwater runoff," a connection he says he can't emphasize enough. "The bottom line is, all of these algae blooms are caused by increased nutrients that we have as a result of pollution."

Q: But this fish kill was massive. What do you think may have caused this event?

A: One potential cause may be our unusually warm fall, which may have brought on an algae bloom. This warm weather was followed immediately by a cold spell, which may have killed the algae and released the toxins that killed the fish. According to MDE (Nov. 14), "This week's fish kill appears to be the largest in Maryland this year. There have been about 80 smaller fish kills this year in Maryland, caused by factors such as low dissolved oxygen levels in water, localized pollution and the discarding of dead fish."

Q: Some people are blaming chemicals coming from Lockheed Martin property as the culprit. Is that possible?

A: There's no evidence of an event on or a chemical release from Lockheed Martin's Middle River property that could have caused the fish kill. (This is being verified by sampling conducted by MDE.)

It takes a catastrophic, uncontrolled event for a chemical release to result in a widespread, far-reaching fish kill.

Q: What about the cleanup work Lockheed Martin is doing at the Middle River Complex and Martin State Airport?

A: All the cleanup activities at the Middle River Complex and Martin State Airport have been reviewed and approved by the Maryland Department of the Environment, and Baltimore County as well as various federal agencies where applicable. The state, the county and in certain situations the U.S. Environmental Protection Agency regularly oversee what we're doing to make sure we're in compliance with all health and safety and environmental regulations, and that we're protecting the environment while we're doing our cleanup. The entire process, beginning with our initial investigation to identify the location and kind of contaminants at the Middle River Complex and Martin State Airport, through the process of deciding the most effective methods of cleanup and their implementation, has been reviewed regularly with citizens, community leaders, community groups and elected officials in the Middle River Area.

Q: What about the chemicals you're cleaning up?

A: Chemicals are being removed from the groundwater at the Middle River Complex as we speak. Only trace amounts have been found in the waters of Dark Head Cove and Cow Pen Creek, well below concentrations known to be harmful to fish. We're now constructing the groundwater treatment facility at Martin State Airport that will remove the chemicals in the groundwater there. Again, the types of chemicals and concentrations detected in the water here are well below the levels known to be harmful to fish.

Q: Could the chemicals in the sediment of Dark Head Cove and Cow Pen Creek have caused the fish kill?

A: No. Because these sediments have been there for many years they are not thought to be related to the recent fish kill in any way.

In the near future Lockheed Martin will be cleaning up these sediments. The primary objective of the Lockheed Martin sediment cleanup is to reduce chemical concentrations of polychlorinated biphenols (PCBs), along with other contaminants, such as metals, by physically removing the sediment with the highest concentrations and then treating the remaining sediment in place. PCBs were released to the environment many years ago, and their production was banned by federal

authorities in 1979. Studies have shown that fish are able to live and thrive under conditions of very high PCB concentrations. However, fish accumulate a variety of chemicals in their bodies and the chemicals can be passed to the next fish or human that consumes them. As a result, MDE has a fish advisory in place for Chesapeake Bay and its tributaries which warns people to limit their consumption of fish caught from Chesapeake Bay waters. Sediment remediation is planned for 2016 and 2017. Lockheed Martin's cleanup of these sediments is under the supervision of the Maryland Department of the Environment and the U.S. Environmental Protection Agency.

Q: Where can I learn more about fish kills or about environmental cleanup activities in the Middle River area?

A: For more information from the Maryland Department of the Environment on fish kills, please see:

<http://www.mde.state.md.us/programs/water/319nonpointsource/pages/mdfishkills.aspx>

For more information on the current fish kill see:

<http://news.maryland.gov/mde/2015/11/14/department-of-the-environment-fish-kill-investigation-continues/>

For more information on Lockheed Martin's environmental cleanup activities, please see www.lockheedmartin.com/middleriver or www.lockheedmartin.com/martinstat

Feel free to contact Gary Cambre, Senior Manager of Communications for Lockheed Martin at 800-449-4486 or by email at gary.cambre@lmco.com if you have questions or concerns.