

ATTACHMENT I

EPA SUMMARY OF FINDINGS

Key Messages

EPA provides technical support to the State of Oklahoma in identifying cause of July 2011 Red River fish kill. The investigation is on-going.

OVERVIEW:

EPA analytical chemists recently determined that a type of mycotoxin, produced by a fungus, was found in water samples from the Red River and is a potential cause of the fish kill that occurred on the Red River in July 2011. The river borders Oklahoma and Texas. The state of Oklahoma requested EPA's assistance in identifying the cause of the fish kill.

Release Timeline: This Summary of Findings is publically releasable. Additionally, EPA scientists are working on a manuscript for rapid publication.

Key Messages:

- EPA scientists recently provided technical assistance to the State of Oklahoma to identify contaminants that are a potential cause of a fish kill that occurred on the Red River in July 2011. The river borders Oklahoma and Texas.
- EPA analytical chemists determined that a type of ergot alkaloid mycotoxin, produced by a fungus, was a potential cause of the fish kill.
- Mycotoxins are a by-product of fungal growth. Ergot alkaloids are produced by the fungi *of the genus Claviceps*, which can grow on rye, barley, wheat, and numerous grasses (such as marsh grass and fescue).
- At this time, EPA and the State of Oklahoma are uncertain how the mycotoxin may have entered the river. Fungi can grow on many different native grasses and it is possible that there was an outbreak of *Claviceps purpurea* on the native grasses in the area at the time of the fish kill. As the fungus dried, spores containing the ergot alkaloids could have been deposited in the river.
- Mycotoxins can be harmful to humans and animals. In humans, exposure to mycotoxins can result in itchy burning skin, hallucination, gangrene, and in extreme cases, death.
- Oklahoma officials collected water and sediment samples from the Red River at the time of the fish kill on July 9 and 13, 2011. They also collected samples on Sept. 14, 2011. The samples were sent to Oklahoma state laboratories for traditional analyses (to investigate for the presence of volatiles, semi-volatiles and metals). Other samples were sent to EPA to analyze for organic contaminants.