

## Environmental Health Assessment Program (EHAP)

## FAST FACTS

*Salem-Keizer School District School Bus Health Consultation***Background:**

In December 2006, a fire broke out in the Salem-Keizer School District's (SKSD) main bus barn and destroyed or damaged several school buses. The school district asked the Environmental Health Assessment Program (EHAP) to conduct a health consultation to determine if children's health might be at risk if they rode any of the affected school buses.

There were no direct reports from children or parents that they were getting sick or having any health effects. However, since some of the bus drivers reported health problems when they returned to work after the fire, the SKSD wondered about the safety of the children.

Children spend far less time on the bus than the drivers do, but a series of environmental tests failed to turn up any answers as to what might be causing the bus drivers' health problems. EHAP analyzed the data collected from an OSHA investigation and consultation meant to address bus driver's health complaints. EHAP's analysis was from the perspective of children's health. This fact sheet summarizes what was learned from the data.

**What we know:**

- Contaminants that were tested were ones that could have caused the reported health symptoms.
- Of all the contaminants measured, none were above standards set to protect the health of children.
- Any chemicals likely released in the fire would not still be in the air when drivers returned to work after the fire (two weeks).
- Some chemicals likely released in the fire could have settled in the seat foam, ceiling materials, and on soot particles, potentially causing chemical sensitivity.
- Diesel exhaust levels were within normal limits, but there is growing evidence that even at the limits that are set, diesel exhaust can cause health problems in children.

### **What we don't know:**

- We have a very limited understanding of the types and amounts of chemicals released during a bus fire.
- If, or how much of the chemicals there may still be in areas like ceiling insulation, seat foam or residual soot.
- If, or for how long, chemicals would remain in these areas.
- If children could come into contact with chemicals which may be lingering in these areas, even though the buses were cleaned.

### **What We Recommend:**

- Address the possibility that fire residues may still be lingering in foam seat cushions, ceiling insulation and residual soot.
- Over time, the fire-affected school buses would be good candidates to be replaced first.

**Also, because there is growing evidence that diesel exhaust can cause health problems in children even at levels that are lower than the standards, we recommend:**

- Increase awareness and enforcement of the SKSD's "no idling" policy
- Ensure proper maintenance of all internal seals on the engine housing to prevent school buses from "self-polluting", or leaking exhaust inside the buses
- Re-sample for phosgene and sulfur dioxide

### **Salem-Keizer School District's "No Idling" Policy:**

- Drivers should turn bus engines off upon reaching their destination.
- Pre-trip bus inspections should be done without the engine running – as much as possible – with the exception of the mandatory brake check.
- Driving slowly into school loading zones or the lot is sufficient "cool down" time for bus engines, and they should be turned off within 30 seconds.

### **What we know and don't know about chemical sensitivity:**

People can become chemically sensitized after they have come into contact with certain chemicals, in sufficient amounts. We don't know if residual fire residue contains chemicals that could cause chemical sensitivity, but it is a possibility.

The variety of symptoms people experience depends upon the type and intensity of chemical exposure. Common adverse symptoms include, but are not limited to, headaches, fatigue, dizziness, chest tightness, shortness of breath or other breathing problems, muscle and joint pain and weakness, palpitations, increased sensitivity to odors, gastro-intestinal symptoms, nausea, depression, irritability, and confusion.

### **Health Effects of Diesel Exhaust:**

Exposure to diesel exhaust has been shown to increase the risk for developing allergies and asthma, particularly in children. It seems even low concentrations of diesel exhaust can cause these health effects, although scientists are still trying to determine how low. Exposure to diesel exhaust has also been shown to increase the risk of developing cancer. Scientists are still unsure about how much diesel exhaust it takes to increase the risk of cancer.

For more information about this health consultation, please contact Karen Bishop at [karen.bishop@state.or.us](mailto:karen.bishop@state.or.us), or 971-673-1219, or Dave Farrer at [david.g.farrer@state.or.us](mailto:david.g.farrer@state.or.us), or 971-673-0971.