

Highway Barriers Block Much More Than Sound

By Noah Bierman, Globe Staff | December 20, 2009

It's tough to think about car exhaust and eight-lane highways when you're in a sparse Idaho desert, staring at bales of straw.



Traffic on Route 128 at a sound barrier in Lexington. A study found that concrete barriers deflect air pollution as well as sound. (John Blanding/ Globe Staff)

But such was the task for a group of federal research meteorologists last year who conducted a study on traffic sound barriers. Their findings, set for publication next month in the journal *Atmosphere Environment*, bolster the arguments of neighborhood activists who often lobby for the expensive concrete walls.

The research found that the barriers do more than protect neighbors against unwanted sounds. They also keep pollution away, reducing it by more than 50 percent on the other side of the barrier.

To simulate car fumes and other pollutants, the scientists used harmless proxy gases that are measurable at very low levels, said Dennis Finn, the lead author and a research meteorologist at the National Oceanic and Atmospheric Administration Air Resources Laboratory in Idaho Falls, Idaho.

Finn and his team set up a virtual highway in the desert, he said, using the bales of straw to simulate concrete barriers.

Then they let out the gas upwind of a barrier, sampling the air on the other side. They set up a parallel experiment without a barrier so they could compare results.

Finn said the 50 percent drop in pollution mirrored findings of other barrier tests conducted in real-world conditions. The advantage in the desert test was that he could control for such outside factors as trees and inconsistent car traffic that can affect real-world tests.

Finn said the gas released in front of the barrier gets picked up by the wind. Some hits the barrier; some goes above the barrier but disperses rather than coming down on the other side.

This sounds fairly predictable. But Finn said that some scientists had previously hypothesized that pollutants could become trapped on the other side of a barrier, where the neighbors live, because wind would be blocked and there would be nothing to disperse the fumes.

Finn lives in an Idaho town with only one highway and relatively few neighbors, so the research does not mean much to his daily life.

But what if he lived in a big city, say next to the Massachusetts Turnpike? Would he want a barrier?

"I would certainly be appreciative of it, I think, if I was living within 100 yards of a heavily traveled road," he said. "A sound barrier would reduce your exposure for sure."