



State of Oregon
Department of
Environmental
Quality

Air toxics benchmarks for industrial facilities' nickel use

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In its October 2015 air sampling conducted at SE 22nd and Powell near Bullseye Glass Company DEQ reported that the level of nickel measured was more than a safe threshold value of 2 nanograms per cubic meter. Later DEQ chose a different the threshold of 4 ng/m³. This fact sheet explains the benchmarks for different forms of nickel and how DEQ uses them.

What are air toxics benchmarks?

Oregon's air toxics benchmarks are planning goals that help DEQ identify, evaluate and address air toxics problems. Oregon air toxics benchmarks are based on concentration levels that might result in a cancer risk of one-in-a-million additional cancers based on a lifetime of exposure. For non-carcinogens, the benchmarks are levels you could breathe for a lifetime without any non-cancer health effects.

An air toxic benchmark is based on a lifetime of constant exposure to an air toxic. Exposure times for people living near the glass facilities are often much shorter. DEQ is in the process of studying the effects of short term exposures to a variety of air toxics.

Benchmarks for different forms of nickel

DEQ's current benchmark for nickel subsulfide, which is known to be cancer-causing, is 2 ng/m³. Nickel subsulfide is a rare form of nickel associated with nickel ore refinement, and is not known or expected to occur at glass manufacturing facilities. Since DEQ had not yet determined which nickel compounds the facilities were producing, the most conservative nickel benchmark of 2 ng/m³ would measure levels at which any nickel emissions, even the rarest, would be at protective in the air.

In addition to the benchmark for nickel subsulfide, there are two other nickel benchmarks: 4 ng/m³ for nickel refinery dust, which is known to be cancer-causing, and 50 ng/m³ for soluble nickel compounds, which are known to have non-cancer effects.

After a thorough inspection of Bullseye Glass Company, DEQ determined that the facility did not emit nickel subsulfide. This is the reason that chose a different benchmark.

Current benchmark for nickel

The DEQ Air Toxics Science Advisory Committee's has recommended revising two nickel benchmarks including a 4 ng/m³ value for nickel insoluble compounds and 10 ng/m³ for soluble nickel compounds that are associated with non-cancer effects. While the Oregon Environmental Quality adoption of these benchmarks is still pending, the recommendation reflects the most current toxicological knowledge about nickel.