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Ross Mantle for The Wall Street Journal

**An auto-repair shop in Queens, N.Y., near a now-defunct firm that handled radioactive material for commercial jobs and for the U.S. weapons program.**

**A U.S. study says workers there may face an elevated lifetime cancer risk.**

## In New York, a Tale of Exposure Raises the Question: How Much Radiation Is Safe?

BY JOHN R. EMSHWILLER



Part of a continuing series on the little-noticed aftermath of the U.S. nuclear-arms buildup.

NEW YORK—On the block in Queens where Irving Avenue dead ends into a vacant lot and old railroad track, with a cemetery just beyond, the mechanics at Los Primos Auto spend

their days working on cars while pedestrians from nearby apartments stop by a corner market for a little shopping. Across the street, an ice-making plant churns away.

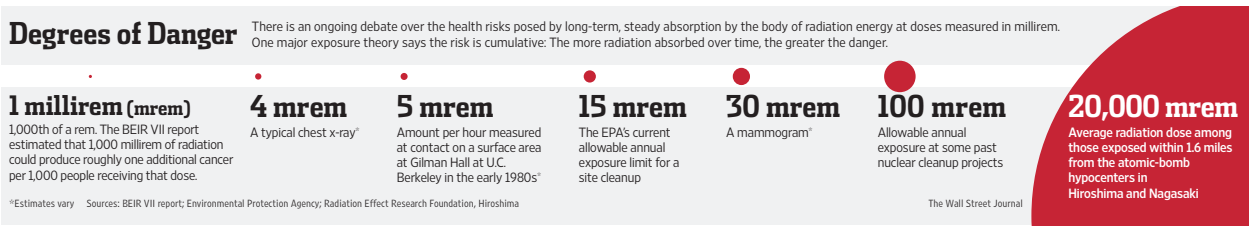
All is normal, except for the radiation rising up from the ground. The contamination dates back to the 1940s and 1950s when a now-defunct company, called Wolff-Alport Chemical Corp., handled radioactive materials as part of its commercial operations as well as for sale to the country's nuclear-weapons program. In the process, the company dumped some of its waste into the sewers and ground, according to government records. Federal and state officials, who are now trying to deal with the problem, say there is no imminent public-health threat.

However, a 2012 study by a U.S. Department of Health and Human Services arm said workers at the auto shop could after one year of exposure face an elevated lifetime cancer risk up to 31 times as great as allowed by federal standards. And "pedestrians who frequently use the sidewalks of Irving Avenue may have an elevated cancer risk from the exposure to ionizing radiation." The report added that the risks of adverse health effects would still be low.

For decades, government officials and science experts have wrestled with the question: How much radiation from nuclear activities should the public be exposed to and how quickly should officials move to clean up sites that are contaminated? It is widely agreed that high doses of radiation, measured in tens or hundreds of rems, which is an amount of energy that is absorbed by the body, can quickly produce health problems or even death. But there is a continuing debate over what health risks are posed by millirem doses absorbed by someone over years or decades. A millirem is one-thousandth of a rem.

A typical chest X-ray gives about 2 to 10 millirem, roughly the same range as a round-trip plane ride across the country. A mammogram gives about 30 or more millirem. An American, on average, gets about 300 millirem a year from natural background radiation, such as the sun.

Scientists and government officials say it is impossible to know whether an individual's cancer was caused by low doses of nuclear radiation, or to precisely say how much risk is posed by certain doses. But even "the smallest dose has the potential to cause a small increase in risk to humans," says a 2006 report from the National Research Council arm of the National Academy of Sciences. This report, known as BEIR VII, is the latest in a long series of radiation health reviews



done at the behest of the federal government. Under this theory, risk rises as exposure accumulates over time.

The BEIR VII report estimated that a rem of radiation could produce roughly one additional cancer per 1,000 people receiving that dose. Using that assumption, 300 millirem a year—the equivalent of the average background dose—could, over 70 years of exposure, cause one extra cancer among about every 50 people exposed.

Current federal radiation-protection standards for allowable public exposures from nuclear sites range from about 15 millirem to 100 millirem a year. These standards have gotten tighter as scientists learned more about the potential risks of radiation—raising questions among some inside and outside government about whether standards used on some past nuclear-cleanup projects were strict enough.

In the late 1980s, the Energy Department looked at the Irving Avenue site under a program, known as Fusrap, to clean locations contaminated by nuclear-weapons work. After deciding that most of the contamination came from other activities, it referred the case to other agencies, which deemed the exposure levels below the then-prevailing standard of 500 millirem a year. But calculations contained in the 2012 Health and Human Services report show that radiation doses for a worker at the auto-repair shop could range from 41 millirem to 5,400 millirem a year, depending on length of workday and the location of the work. For a pedestrian, annual doses could range from 7 millirem to 656 millirem.

The site drew attention in 2007 during radiation surveys being done by New York City and state officials, documents show. At that point, the radiation levels were deemed high enough to spark action. So far, at a contaminated empty lot, Environmental Protection Agency officials have cleared weeds, removed two abandoned boats, erected a new fence, laid fresh gravel and dirt, and put down a cement strip as a radiation shield on a particularly hot spot. On a recent day, a barbecue used by the auto-shop workers sat on that strip.

On part of the sidewalk, the EPA is laying down a thin metal “sandwich,” says Eric Daly, the EPA’s on-scene coordinator. The agency is also installing new cement flooring, with some lead, in the auto shop.

## **WASTE LANDS**

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This remedial work is a “short-term activity to ensure workers and pedestrians don’t receive more gamma radiation” than standards allow, says Mr. Daly. Permanently removing contamination from under the buildings, sidewalks and the street, where radiation readings have been more than double normal background radiation, would be a longer-term task, officials say. One city survey estimates contamination goes down 20 feet or more.