

Understanding the World's Worst

The Top Ten (and indeed the long list of 35 "candidates") clearly include a very wide range of different circumstances and conditions. However, while accepting the specific issues of each site, there are some patterns and trends that can be seen.

Size matters. The very large sites (such as a big city or a river basin) will always rank high on any list of polluted areas but the smaller sites often pose a much higher localized health risk. This question of scale versus intensity underlies all efforts to compare sites and also determines the approaches that can be taken to deal with an area. Small sites, with severe but localized contamination can be resolved at the local level with relatively limited resources. The citywide or river basin problems clearly require a programmatic approach with long-term support and funding. However, many cases fall somewhere in between these extremes and can be complicated to address and expensive to remedy, which may be why the problems have persisted.

The health focus strongly influences the rankings The clear evidence of toxicity and pathways puts the mining and smelting sites way up on the list. In the same vein, some well know sites (such as Vapi and Ankleshwar in India) ended up low on the consensus list for the Top 10. They may be creating environmental and economic costs in the ground and surface waters, but the immediate health impacts are less clear.

In most cases, the big Fortune 500 companies are not complicit. Almost all of the sites listed for consideration for the Top Ten do NOT have major multinational involvement. (Almost – there is just one site that does have multinational involvement (Doe Run Corp in La Oroya)). Instead, the worst pollution is from a range of sources:

- Old companies now long defunct and untraceable
- Government companies and activities, especially cold war activities
- Local or regional businesses, not international ones.
- Clusters of small artisanal activities

In fact, Blacksmith experience is that the presence of a large Fortune 500 or FTSE 500 company in a given sector in a developing country will often provide a role model for other industries, elevating the overall environmental performance for others in the neighborhood. Rarely are these companies responsible for sites or operations that pose really significant health risks.

Most of the worst places are not generally known, even in their own countries. Tucked away from the large capital centers for good reason, highly polluted places are often a forgotten sector of the community. While some of the sites achieve enormous notoriety because of their international focus (Chernobyl and Bhopal for example), the actual health risk may not be commensurate with their fame. The worst sites, such as Dzerzhinsk and Kabwe, are often unknown or ignored, even by their own governments.

Air pollution is pervasive, wherever it occurs. Outdoor air pollution is perceived as a major issue in many cities (it helps that the rich can't really avoid it). Given that fine particulates



(PM10 and PM2.5) are surprisingly toxic, cities with high levels of air pollution from old vehicles, 2-strokes, bad quality fuel, poor road surfaces and the like are high on most lists (e.g. Mexico, Linfen). This conclusion is fully consistent with the focus of World Bank and other agencies on reducing air pollution because of the large health benefits. However, this form of pollution is toxic in the short term but has little legacy effect. (Indoor air is actually the hidden killer – smoke from cooking and heating with poor fuels kills vast numbers of poor women and their children. These effects are literally hidden away and have only recently begun to receive serious attention.)

Soil contamination particularly affects children. Kids play in the dirt and are very highly exposed to contaminated material. The really small ones eat the stuff. It is usually the poor who grow food in these soil and as a result the food can become highly contaminated. This factor drives the high scores for the sites where heavy metals are prevalent.

Water pollution is complicated. In theory, it is straightforward to avoid polluted water, although the options (such a bottled water) are often limited or unrealistically costly. In reality, where major water systems are very heavily polluted, there are few alternatives and many people are exposed through drinking water. The location of the pollution is also relevant to the level of human impact. The Huai Basin in China scores high, because so many people use the river directly or via groundwater, while the immediate impact of Vapi in India is much lower because the pollution is well downstream and is mainly discharged to the sea (with serious ecological impacts).

Many other places have very similar problems. There are unfortunately many medium to large industrial cities which all score high on any index of overall pollution. The nominated list includes a number of such examples (in Russia, China and India, for example), and it was difficult to separate them on this list. Sadly, there are also many other cities around the world that would rank similarly. The Top Ten strives to reflect a reasonable geographic balance, and to include sites that are good representatives of a range of similar sites.



The Top Ten - Summary

Our list of the Ten Worst is as follows:

Location	Type	Pollutants	Legacy/ Active	Source	Cleanup Status
Linfen, China	Air, Water	Various Gases and Particulates	Active	Various Industries	Unknown
Haina, Dominican Republic	Soil	Lead	Legacy	Battery Recycling	None
Ranipet, India	Water, Soil	Chemicals	Legacy	Tanning Industry	Planned, but not begun
Mailuu-Suu, Kyrgyzstan	Soil, Water	Radioactive Waste	Legacy	Soviet-era Uranium Plant	Planned, with World Bank support
Dzerzhinsk, Russia	Water and Soil	Chemicals	Legacy, some Active	Soviet-era Chemical Weapons Production and others	Planning only
Norilsk, Russia	Air, Soil, Water	Sulfur Dioxide, Strontium-90, Caesium-137, Others	Active	Platinum Production, Other mills	Unknown
Rudnaya Pristan, Russia	Soil	Lead	Legacy and Active	Lead Mining	None
Chernobyl, Ukraine	Soil, Water	Radioactive Materials	Legacy	Soviet-era Power Plant Accident	Ongoing
Kabwe, Zambia	Soil	Lead	Legacy	Lead Mining	Early Days – process begun with World Bank support
La Oroya, Peru	Air, Soil	Lead	Active and Legacy	Metal Mining and Production	Unknown

