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## World's worst pollution sites - 13th September '07

On September 12, the US-based Blacksmith Institute, an independent environmental group, in partnership with Green Cross Switzerland, issued its Top Ten list of the world's most severely polluted places. Overall, the ten sites lie in seven countries and affect a total of more than 12 million people, the institute states.

The Top Ten list appears in Blacksmith Institute's World's Worst Polluted Places 2007, a report on the places where it says pollution most severely impacts human health, especially the health of children. The 2007 list contains four new sites - two in India, one in China and one in the republic of Azerbaijan - and six that carry over from the list which debuted in 2006.

"The fact of the matter is that children are sick and dying in these polluted places, and it's not rocket science to fix them," says Richard Fuller, founder and director of Blacksmith Institute. "This year, there has been more focus on pollution in the media, but there has been little action in terms of new funding or programs. We all need to step up to the plate and get moving."

The report lists the ten sites alphabetically by country because within the list the sites are unranked. The report states, "ranking is not realistic or feasible...given the wide range of location sizes, populations and pollution dynamics."

- Sumgayit, Azerbaijan - source petrochemical and industrial complexes
- Linfen, China - automobile and industrial emissions
- Vapi, India - industrial estates
- Dzerzhinsk, Russia - Cold War-era chemical

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The first of the sites involving mining and processing is Tianjin in Anhui Province, China, which is one of the largest lead production bases in the country, with an output accounting for half of the country's total production. Low-level technologies, illegal operation and the lack of any serious pollution control measures in the firms have caused several severe lead poisoning cases in the region. Sukinda Valley, in the State of Orissa, contains 97% of India's known chromite ore deposits and one of the largest open-pit chromite mines in the world. The report says "12 mines continue to operate without any environmental management plans and over 30 Mt of waste rock are spread over the surrounding areas and the Brahmani riverbanks. Untreated water is discharged by the mines into the river. This area is also flood-prone, resulting in further contamination of the waterways. Approximately 70% of the surface water and 60% of the drinking water contains hexavalent chromium at more than double national and international standards and levels of over 20 times the standard have been recorded. The Brahmani River is the only water source for the residents and treatment facilities are extremely limited. The State Pollution Control Board has conceded that the water quality at various locations suffers from very high levels of contamination. The air and soils are also heavily impacted. At La Oroya in Peru, which appears on the list for the second year running, Doe Run Peru is working hard to overcome and clean up decades of environmental mismanagement by the previous operator of this metallurgical complex in the Andes. Similarly, Norilsk Nickel is today working hard to remediate the situation it has with plants that were constructed during the Soviet era, a period of non-existent environmental standards or controls. The Siberian industrial city of Norilsk was founded in 1935 as a slave labour camp. It is the northernmost major city of Russia and the second largest city (after

Murmansk) above the Arctic Circle. Mining and smelting operations began in the 1930s and this city now contains the world's largest heavy metals smelting complex, where over 4 Mt/y of cadmium, copper, lead, nickel, arsenic, selenium and zinc are released into the air, the report claims. The Blackbird Institute says "the city has been accused of being one of the most polluted places in Russia, where the snow is black, the air tastes of sulphur and the life expectancy for factory workers is 10 years below the Russian average. A 1999 study found elevated copper and nickel concentrations in soils in as much as a 60 km radius of the city."

At Kabwe in Zambia, the institute claims that though the mine and smelter are no longer operating, they "have left a city poisoned by debilitating concentrations of lead dust in the soil and by metals in the water. In one study, the dispersal in soils of lead, cadmium, copper, and zinc extended over a 20 km radius at levels much higher than those recommended by the World Health Organization."

The institute says its Top Ten list "is based on scoring criteria devised by an international group of experts including researchers from Johns Hopkins University, Hunter College, Harvard University, IIT Delhi, University of Idaho, Mt. Sinai Hospital, and leaders of major international environmental remediation companies who comprise Blacksmith Institute's Technical Advisory Board (TAB). Specialists from Green Cross Switzerland also participated in this year's assessment."

The methodology for 2007 Top Ten list was refined "to place more weight on the scale and toxicity of the pollution and on the numbers of people at risk," according to the report. The inclusion of Sumgayit and Vapi results from changes in the scoring methodology. Tianjin and Sukinda were newly identified in this year's list development process.

"We received over 40 new site nominations from people around the world as a result of publishing the

2006 list. Our database now includes over 400 polluted sites," observes Hanrahan, Blacksmith's Director of Global Operations. "We will continue to refine the evaluation process and update the report yearly. Getting the problem of extreme pollution in the developing world on the 'radar' is a first step to taking action."

Another new feature of the 2007 report is the "Dirty 30," a more comprehensive group of polluted locations around the globe that includes the Top Ten. The four sites from the 2006 Top Ten that do not appear in the 2007 list - Haina, Dominican Republic; Ranipet, India; Mailuu-Suu, Kyrgyzstan; and Rudnaya Pristan, Russia - all remain in the larger list.

The majority of the Dirty 30 sites lie in Asia, with China, India, and Russia having the greatest number. The only geographic regions not represented in the Dirty 30 are the Middle East and Oceania. Toxic pollution in these sites has resulted from sources as diverse as massive industrial estates, large-scale mining and smelting operations and even Cold War era chemical weapons production.

"All the sites in the Dirty 30 are very toxic and dangerous to human health," says Hanrahan.

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