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## The World's 10 Most Polluted Places [Slide Show]

The list includes locations suffering from toxic pollution as a result of everything from e-waste to chemical weapons

By David Biello

Agbogbloshie, a neighborhood of Accra, Ghana, wasn't a pretty place in 2006, but the rising [flood of e-waste](#) had yet to completely drown the dump in the middle of town in toxic pollution. Ghana now imports some 215,000 metric tons of European computers, cell phones, microwaves, refrigerators, televisions and other electronic goods, making Agbogbloshie the second-largest site for processing such e-waste in all of west Africa. It may yet take the title as largest because e-waste imports are expected to double by 2020. And Agbogbloshie has already earned the dubious distinction of landing on the Blacksmith Institute's top 10 list of the [world's most polluted sites](#), after failing to make the cut for the original list in 2006.

"Everybody wants a laptop, wants the modern devices," noted Jack Caravans, Blacksmith's director of research, at a November 4 press conference unveiling the list. "[Stopping e-waste](#) is proving very complicated and difficult," particularly because the newest gadgets, such as tablet computers, are even more difficult to recycle than old desktop computers.

Environmental groups the Blacksmith Institute and partner Green Cross Switzerland have compiled the list after surveying more than 2,000 sites in 49





**AGBOGBLOSHIE:** This e-waste dump where scavengers create toxic pollution by burning off the sheathing of copper wires is among the world's worst hot spots for toxic pollution.  
 Image: Blacksmith Institute

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countries in less than a decade. The partners issued their [first top 10](#) in 2006, and chose the 10 to represent the worst example of typical [types of toxic pollution](#), such as [artisanal gold mining](#) or tanneries. Such toxic pollution threatens the health of more than 200 million people, and industrial pollutants, led by lead–acid battery recycling, affect the health of more people than [malaria](#) globally, according to Blacksmith's calculations.

**[View a slide show of the top 10 most polluted places in the world.](#)**

One major change in this year's annual list is the inclusion of several river basins, such as the Citarum River in Indonesia or the Niger River Delta, rather than just major industrial sites. That's because such river basins often are home to thousands of small industries that pour pollution into the waterway. "The number of people involved is very large," said David Hanrahan, chief technical advisor for Blacksmith, but many of those people rely on the polluting industries for jobs. "They are not only [poisoning themselves](#), their neighbors and the environment, but it's also the only way they can make a living."

That said, cleaning up such sites is not impossible. Several places that appeared on the original list have now dropped in the rankings, either because they have been or are being cleaned up. For example, soil that is heavily contaminated with lead at the [lead–acid battery recycling](#) center in Haina in the Dominican Republic has been dug up and buried in a specialized landfill. As a result, Haina is the only location to be completely delisted since 2006.

Highly polluted places in China and India have also fallen out of the top 10 this time around, thanks to government efforts to address the toxic pollution issues. The Chinese government shut down more than 2,000 highly polluting factories in Linfen and forced those that remained to install [cleaner-burning coal-fired](#) devices. The Indian government has implemented a program to assess and remediate all the contaminated sites in the country. "India made such strong efforts that we have not included them on the list," said Bret Ericson, a senior project director at Blacksmith. "If inadequate efforts have been made, then [the sites] remain on the list."

Improvements have been helped by local people in China or India convincing central governments to listen to their concerns about such toxic pollution. In countries such as Russia, where public pressure has proved more difficult to express, similar improvements are harder to find. At the same time new technologies—such as mercury-free devices for separating gold from ore or bone char that can bind lead in soil, rendering it chemically inert in the human body—may help turn some of these problems into a [legacy of the past](#). Ultimately, such cleanups most often require the investment of hundreds of millions of dollars, at minimum, as well as the basic infrastructure to properly dispose of toxic waste.

Although none of the top 10 sites are in the U.S., Japan or western Europe, that does not absolve the rich world from blame. A lot of the pollution in poorer countries has to do with the lifestyles of richer ones, noted Stephan Robinson of Green Cross Switzerland—for example, a tannery in Bangladesh that provides leather for shoes made in Italy that are sold in New York City or Zurich. "The pollution we see is not coming from the major global industrial companies, it's all from small mom-and-pop shops, which prepare the raw materials that we then later use," Robinson said. Or, in the case of Agbogbloshie, Ghanaians are polluted by the [electronic devices](#) [Westerners have already used](#). Local people in such areas, Robinson added, "are very

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often polluting their environment not because they think it is fun but because it is a question of survival."

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**1. jctyler**  
04:31 PM 11/5/13

You could have awarded a honorable mention to the entire Pacific coast soon to be hit by a trash heap the size of Texas from the Japanese tsunami.

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**2. littleredtop**  
12:13 AM 11/6/13

Toxic pollution is one thing but human pollution quite another story. Human pollution is actually the cause of toxic pollution. To combat toxic pollution we must first address human pollution.

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**3. Cramer**  
01:16 AM 11/6/13

Welcome to the libertarian utopia of no regulations.

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We have three choices:

- 1) continue to export pollution to these countries,
- 2) remove regulations and import pollution back to America, or
- 3) require trading partners to adopt regulations to reduce pollution.

What does free trade mean?

Hypothetically, what would be your choice of the following:

- 1) export slavery (i.e. import foreign goods made with slave labor),
- 2) import slavery (return to pre-1865 America), or
- 3) require trading partners to make slavery illegal.

At the very least we should start with the BRIC nations.

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**4. badger**  
10:35 AM 11/6/13

In the description for image 5, what on earth is a 'cubic liter' a unit of? A liter is a unit of volume and equals one cu.dm.

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**5. frenature**  
10:51 AM 11/6/13

Electronic waste is threatening the health of more than 200 million people but most people wants the new devices without think about how to recycle after use. Before it gets worse, we

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should think about 'my happiness can be someone else's misfortune'.

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#### 6. Fanandala

04:44 PM 11/6/13

@ badger

The article is written by Greenpeace, they obviously discovered another dimension that allows for cubic liters.

Picture 1 shows a guy burning a car tyre to extract the little bit of steel in it. Copper in cable form is quite valuable and is recycled in first world countries.

As for the Chernobyl picture: The exclusion zone has become a haven for wildlife, so low level exposure to radioactivity is probably not all that harmful, and what could Greencross possible teach the people of the Ukraine that they don't know already. The Ukraine is not a third world country.

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#### 7. Mark Hamilton, Esq.

10:20 PM 11/6/13

if Gandhi were alive today, he would say pollution is the biggest weapon of war.

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#### 8. jctyler

in reply to [Fanandala](#)

02:52 AM 11/7/13

'The article is written by Greenpeace'

It is written by David Biello appreciated for well researched and well written scientific articles. And you are?

Don't present your uninformed opinion (on authorship) as fact.

'they obviously discovered another dimension that allows for cubic liters.'

Although the term is generally not used in public the author meant 1000 litres and used the term correctly. Should it be avoided in pieces accessible to uneducated twats? Hm. Wouldn't that ultimately mean closing down SciAm?

'Picture 1 shows a guy burning a car tyre to extract the little bit of steel in it. Copper in cable form is quite valuable and is recycled in first world countries.'

Except for its grammatical structure this sentence is devoid of any logic. For example, does the commenter imply that non-first world countries do not use car tyres, that they therefore have no tyres to burn? Additionally, that this picture is a fake? Or does the commenter want to tell us that the poor non-first-world countries ship their used tyres to first-world countries for recycling (and that this picture is therefore probably a Greenpeace fake)?

'As for the Chernobyl picture: The exclusion zone has become a haven for wildlife'

That is a plonker myth so disproved every year anew that even the most retarded tea baggers don't dare use it anymore.



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Rather that we deal here with a commenter who doesn't know his Chernobyl reality from a hole in his microwave.

'so low level exposure to radioactivity is probably not all that harmful'

Low level? Probably? Hear, hear!

'and what could Greencross possible teach the people of the Ukraine that they don't know already.'

You implicate Gorbachov's association? Well, Gorbachov ended the Cold War and opened the Eastern bloc to democracy. If you knew anything about today's Ukraine you'd see what Gorbachov could bring it.

Also, Greencross could teach the present Ukraine despots quite a lot about the environment except that they don't want to know for reasons of pure corruption. You know nothing about the Ukraine.

'The Ukraine is not a third world country.'

For any practical purpose and any way you look at it it is. You know nothing about the Ukraine.

In fact, what do you know? Having strange and completely unsubstantiated opinions does not count as knowledge.

Whereas, seen that cognitive scientists also read SciAm, are you aware that they could draw some damn good conclusions from your comment about your cognitive state?

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**9. jerryd**  
in reply to **Cramer**  
10:04 AM 11/7/13

Or we could move those jobs back here to the US, Europe, No?

Here in Tampa with our high US costs they take the same E waste and make good money at it without polluting anything.

And it's a very rich source of valuable metals and most of the plastic can be simply distill into gasoline and diesel as 50% of plastics can be if not made back into more plastics.

Also the US has nearly 100% lead battery recycling, just reforming the materials into new lead batteries. Most batteries are on the 10-20 time recycled now here.

Country's need do their own e waste recycling to keep pollution down and materials to build their economies.

Facts are garbage/wastes of all kinds are really high grade ores to make new things from, far better than most ores % wise, if done right.

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**10. Sisko**

10:45 AM 11/7/13

It is interesting to me that many people "concerned" about the environment focus so heavily on CO2 emissions and ignore the obvious harms that people are doing to the environment that are a real potential harm to many people.

CITARUM RIVER INDONESIA, HAZARIBAGH BANGLADESH, KABWE ZAMBIA, KALIMANTAN INDONESIA, RIO MATANZA-RIACHUELO ARGENTINA, NIGER RIVER DELTA NIGERIA, and NORILSK RUSSIA are all excellent example of place where people are generating vast amounts of pollution and putting undisputed chemicals into the water and/or air that will lead to harms to others.

Why is there so little focus of these true harms?

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