

Cities Are Not Only Tackling Covid, But Its Pollution, Too

All around the world the remnants of a global pandemic are testing the resolve of governments and private firms to rid the planet of its waste.

By Jessica Leigh Hester

Nov. 16, 2021

The River Thames, the tidal artery that squiggles through central London, holds up a mirror to life on dry land: scraggly remains of fir trees float by after Christmas; in the first days of a fresh year, bobbing champagne bottles hint at recent revelry.

Lara Maiklem, author of “Mudlark: In Search of London’s Past Along the River Thames,” scours the shoreline for artifacts such as coins, tokens, buckles and potsherds, some dating to the period of Roman rule. Loosed from pockets or heaped as infill, these are the flotsam of centuries lived on London’s streets.

“I find stuff because humans are litterbugs,” Ms. Maiklem said. “We’ve always been chucking things into the river.”

But lately Ms. Maiklem is encountering a type of garbage she hadn’t seen there before: the remnants of Covid 19-era personal protective equipment (or P.P.E.), particularly masks and plastic gloves bloated with sand and resting in the rubbly silt.

Ms. Maiklem once counted around 20 gloves while canvassing 100 yards of shoreline. She wasn’t surprised; if anything, she had feared the shore would be even more inundated with pieces that had flown from pockets or trash cans or swirled into the Victorian sewers. Happily, Ms. Maiklem said, the carpet of Covid-inspired trash at the edge of the Thames wasn’t nearly as plush as it is elsewhere.



A protective face mask in the sand on Tel Aviv’s beach in April. Jack Guez/Agence France-Presse — Getty Images



Plastic gloves, face masks and other waste in waters off Antibes, France. Operation Mer Propre, via Associated Press

P.P.E. litter is fouling landscapes across the globe. Dirtied masks and gloves tumbleweed across city parks, streets and shores in Lima, Toronto, Hong Kong and beyond. Researchers in Nanjing, China, and La Jolla, Calif., recently calculated that 193 countries have generated more than 8 million tons of pandemic-related plastic waste, and the advocacy group OceansAsia estimated that as many as 1.5 billion face masks could wind up in the marine environment in a single year.

Since January, volunteers with the Ocean Conservancy's International Coastal Cleanup have plucked 109,507 pieces of P.P.E. from the world's watery margins.

Now, across the litter-strewn planet, scientists, officials, companies and environmentalists are attempting to tally and repurpose P.P.E. — and limit the trash in the first place.



Slipping out of pockets, falling off wrists or blowing out of trash cans, face masks are littering streets across the globe, including in front of the Lincoln Memorial in Washington. Kevin Lamarque/Reuters

Trash surveys and cleanups

Todd Clardy, a marine scientist in Los Angeles, sometimes counts the P.P.E. he sees on the 10-minute walk from his apartment in Koreatown to the Metro station. One day this month, he said, he spotted “24 discarded masks, two rubber gloves and loads of hand sanitation towelettes.” Sometimes he sees them atop grates that read, “No Dumping, Drains to Ocean.”

Climate Fwd A new administration, an ongoing climate emergency — and a ton of news. Our newsletter will help you stay on top of it. [Get it sent to your inbox.](#)

Dr. Clardy suspects some masks simply slip from wrists. “Once it falls on the ground, people probably look at it like, ‘Huh, I’m not wearing that again.’” Breezes likely free some from trash cans, too. “The bins are always full,” Dr. Clardy added. “So even if you wanted to put it on top, it would fly away.”

Dr. Clardy’s accounting isn’t part of a formal project, but there are several such undertakings underway. In the Netherlands, Liselotte Rambonnet, a biologist at Leiden University, and Auke-Florian Hiemstra, a biologist at Naturalis Biodiversity Center, keep a running count of masks and gloves littering streets and canals. They track animals’ interactions with the castoff gear.

Among their documented examples are an unfortunate perch trapped in the thumb of a phlegmy-looking latex glove, and birds weaving P.P.E. into nesting materials, risking entanglement. “Nowadays it would be difficult to find a coot nest in the canals of Amsterdam without a face mask,” Ms. Rambonnet and Mr. Hiemstra wrote in an email.

The researchers maintain a global website, Covidlitter.com, where anyone can report animal and P.P.E. incidents. Dispatches include sightings of a brown fur seal tangled in a face mask in Namibia; a mask-snarled puffin found dead on an Irish beach; and a sea turtle in Australia with a mask in its stomach. Back home, the researchers, who also lead canal cleanups in Leiden, worry P.P.E. trash will

increase now that the Dutch government has reinstated mask requirements.

“Every weekend we encounter face masks — new ones and old, discolored ones,” Ms. Rambonnet and Mr. Hiemstra wrote. “Some are barely recognizable, and blend in with autumn leaves.”



A discarded plastic glove on the pavement in London in March 2020. Daniel Leal-Olivas/Agence France-Presse — Getty Images



A macaque monkey playing with a face mask in Malaysia in October 2020. Mohd Rasfan/Agence France-Presse — Getty Images

Cleanup efforts are also underway in London, where staff members and volunteers with the environmental group Thames21 count and collect trash from the river's banks. In September, the group closely surveyed more than a kilometer of shore and found P.P.E. at 70 percent of their study sites — and notably clustered along a portion of the Isle of Dogs, where 30 pieces pocked a 100-meter stretch.

“I don’t remember seeing any face masks until the pandemic; they weren’t on our radar,” said Debbie Leach, the group’s chief executive officer, who has been involved since 2005. Ms. Leach’s team sends the P.P.E. to incinerators or landfills, but small bits are surely left behind because the trash “releases plastics into the water that can’t be retrieved,” she said.

Researchers in Canada recently estimated that a single surgical-style mask on a sandy shoreline could unleash more than 16 million microplastics, far too small to collect and haul away.



A sign at a school in Santiago, Chile, reminded passersby to throw away their Covid trash. Esteban Felix/Associated Press

Anti-litter campaigns

Roaming sandy swaths along Chile's coast, Martin Thiel, a marine biologist at the Universidad Católica del Norte in Coquimbo, saw plenty of signs asking visitors to mask up — but few instructions about ditching used coverings. To his frustration, masks were scattered, swollen with sand and water and tangled in algae. “They act a little like Velcro,” he said. “They very quickly accumulate stuff.”

But a few beaches, including one in Coquimbo, had trash cans designated specifically for P.P.E. Unlike oil-drum-style alternatives nearby, some had triangular tops with tiny, circular openings that would deter rummaging and prevent wind from tousling the garbage.

In a paper published in *Science of the Total Environment* this year, Dr. Thiel and 11 collaborators recommended that communities install more purpose-built receptacles like these, as well as signs reminding people to consider the landscape and their neighbors, human and otherwise.

“We think there is more to the story than, ‘just protect yourself,’” said Dr. Thiel, the paper's lead author.

Houston has already started. In September 2020, the city launched an anti-litter campaign partly aimed at P.P.E. Featuring images such as a filthy mask on grass, the posters read “Don't Let Houston Go to Waste” and encouraged residents to “Do the PPE123,” choreography that entailed social distancing, wearing masks and throwing them away.

Early in the pandemic, “we weren't sure if [P.P.E.] was a safety concern and would spread Covid around the city,” said Martha Castex-Tatum, the city's vice mayor pro tem, who spearheaded the initiative. As a clearer picture of transmission emerged, the effort “became a beautification project,” she said. The images were plastered on billboards, sports stadium jumbotrons and trash-collection trucks. Council members handed out 3,200 trash grabber tools and urged residents to use them.



One use for discarded masks: Stuff them into plastic bottles, where they could be transformed into “ecobricks.” Young people in La Paz, Bolivia, participated in a campaign in October. Martin Alipaz/EPA, via Shutterstock

Recycling efforts

As the pandemic bloomed across South Africa, shoppers grabbed fistfuls of wet wipes as they entered stores, draping the cloths over shopping cart handles while roaming aisles, said Annette Devenish, marketing manager at Sani-touch, a brand that supplies many national Shoprite Group supermarkets with wipes for customer use. Sani-touch found that usage soared 500 percent early on and has fallen, but still hovers above prepandemic figures.

Environmentalists often rail on wet wipes, many of which snarl sewer systems when they are flushed down drains and degrade into microplastics that drift through food webs. (Thames21, for instance, is backing newly proposed legislation that would ban all wipes containing plastic.)

Ms. Devenish said that manufacturers ought to focus on making them recyclable or compostable, and this fall Sani-touch launched a project to give used wipes a second life. Customers can drop off cloths before leaving the store; recycling companies will turn the polypropylene cloths into plastic pallets for use in Sani-touch’s manufacturing facilities.

Fashioned from many materials, including metal and elastic, single-use masks can be harder to recycle, Ms. Devenish said, but she hopes they can be stuffed into plastic bottles to become “ecobricks,” low-cost building blocks of benches, tables, trash bins and more.

P.P.E. recycling schemes are also advancing elsewhere. In the Indian city of Pune, the CSIR-National Chemical Laboratory is teaming up with a bio-medical waste facility and private companies to pilot ways to transform head-to-toe protective wear into plastic pellets used to manufacture other goods. (None are yet being made and sold, “but hopefully soon,” wrote Harshawardhan V. Pol, a principal scientist, in an email.)

In fall 2020, the Canadian government asked companies to pitch ideas for recycling P.P.E. or making it compostable. The government may funnel up to \$1 million each toward a few prototypes.

Preventing P.P.E. from polluting urban environments will be a boon to the spaces where residents have sought solace. “In stressful times, people seek out these places, but they’ve been pretty bad about taking rubbish and trash away with them,” said Ms. Leach of Thames21. “Masks blow hither and thither,” she added, “and finally come to rest when they hit a patch of water,” grass or sidewalk, where they too often remain.