

# EX TROPICIS



ENVIRONMENTAL NEWS

## Feature Story

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### Guanabara Bay: from pearl necklace to Rio's refuge dump

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Pictures by Lucio Bernardo (Color/b&w)

Fifty years ago, Cole Porter compared the Bay of Guanabara, facing the city of Rio de Janeiro, to a pearl necklace. For three generations the Brum family have made their living by fishing the calm waters of the bay. Since they were eight, the brothers Sebastião (58) and Joaquim (46) have cast their nets for sardines, shrimps and anchovies. The catch used to be plentiful but, today they bring up more garbage than fish.

In less than 100 years of industrialization, one of the world's most beautiful shorelines has been transformed into an enormous refuge dump. Lack of environmental control or city planning, and the proliferation of squatter settlements crowded with shanties throughout the 14 municipalities of which the Rio de Janeiro metropolitan area is made up, are the main causes. Every day, 500 tons of waste are discharged into the bay, which has a surface area of 381 square kilometers.

This volume of refuse is equivalent to an entire soccer stadium, such as Maracanã, the biggest in the world and located precisely in the city of Rio. The waste is produced by 9 million inhabitants, 6,000 factories, 16 ocean terminals for bulk cargoes, two ports, and an oil refinery.

"At night our boat's propeller gets tangled in plastic bags," said Sebastião. "There is often so much oil in the water that you know in advance no fish could be alive there." He can easily recall the days when the fishing boats were accompanied by dolphins, today reduced to a symbol on the city's flag. Fish are getting almost as scarce, and soon fishermen may be an endangered species too, added Joaquim.

"The fish can't find food because in many places the sea bed is thickly covered with garbage and oil," he said.

Notwithstanding the pollution, 6,000 fishermen still manage to make out a living in Guanabara Bay. According to Focrea, the state environmental agency, 260 tons of fish and 20 tons of mussels are caught each day and considered safe for human consumption by World Health Organization (WHO) standards.

### Giant Clean-up Program

Following the example of the Thames clean-up in Britain, the authorities plan to

undertake a major pollution control operation in Guanabara Bay. They plan to invest about one billion dollars this year and next, to begin the clean-up, but completion is not scheduled until 2000, when the total investments are to have risen to five billion dollars.

The Inter-American Development Bank has promised to lend \$500 million dollars, against an undertaking by the federal and state governments to provide a matching \$250 million dollars. The federal government aims to fund the rest the project as part of a larger program called "Rio Environment," involving the rehabilitation of 35 rivers which discharge waste from outlying areas of Greater Rio into the bay.

The key stage in the development of the program has already begun. Teams of FEEMA engineers and technicians from other environmental agencies are surveying the region to create a map of major sources of pollution. The worst damage to the bay's ecosystems comes from industrial waste, particularly heavy metals such as lead, chromium and copper. FEEMA'S survey shows high concentrations of these pollutants in river sediment.

Fifty-two industrial firms cause 80% of the industrial pollution. Among them are General Electric, Gillette and Westinghouse, as well as Brazilian giants such as Petrobrás, the federal oil company, and Brahma, a leading brewer and beverage manufacturer. Adir Ben Kaus, president of FEEMA, told *Agência Estado* all of them are being submitted to strict emission controls. The installation of equipment is not always sufficient to eliminate pollution, he explained.

Petrobrás, recently invested \$100 million dollars to reduce emissions at its Duque de Caxias refinery, but continues to discharge large amounts of oil into the bay, with a heavy content of phenols and heavy metals.

### Population pollutes most

Pollution is eroding the very surface area of the bay of Guanabara. At the turn of the century, before its shores became the highly built-up areas they are today, with industrial and residential districts, and with hundreds of squatter settlements strung out along the banks of the 35 rivers and streams which debouch into the bay, its surface area shrank at a rate of two millimeters per year. Today it is shrinking five times as fast, at a rate of one centimeter per year. Part of this phenomenon is due to the 270 tons of waste produced by the population and dumped in the bay every day.

Leandro Fagundes, 46, is a scavenger in the Gramacho refuse dump. The Landfill currently covers 1.2 million square meters and receives 4,000 tonnes of waste every single day. Fagundes picks out items he can sell, such as plastic and glass bottles, and cans. But back at his shack near the Sarapui, one of the 35 streams that discharge into the bay, Fagundes throws all his household waste, including night soil, directly into the river.

"We don't have piped water, let alone sewers in our favela," he explained. "The outlet from the lavatory goes directly to the river." The favela (squatter settlement) is eloquently

named "Lixão," Portuguese for garbage pile.

According to José Paulo Pinto Teixeira, director of operations with Comlurb, the Rio refuse collection company, the communities living near the streams that flow into the bay (Sarapui, Meriti, Iguaçú, Irajá and others) are responsible for most of the waste disposed of there. Many squatter settlements on the shores of the bay equipped with refuse collection facilities. They remain a dramatic social problem but are no longer a major environmental hazard, Teixeira said.

"At Ponta do Caju the garbage has piled up so thick that there's no bay left," said fisherman Joaquim Brum. According to FEEMA President Ben Kaus, just over half the \$750 million dollars to be obtained from the IDB will be spent on basic sanitation.

The problem affects all areas of the city, even the famous sophisticated neighborhoods in the south, such as Flamengo, Botafogo and Urca. Here, the beaches, bathed by the waters of the bay, are often unsafe because of contamination by waste.

FEEMA often puts up red flags from one end of the promenade to the other, indicating "excessive concentration of fecal coliform bacteria," a familiar term to the inhabitants of postcard beautiful Rio.

"I take my children to the beach but don't let them go near the water," said Renata Moraes, who has two sons aged 3 and 5. "Even so they often catch skin diseases just from playing on the sand," she said.

### Recycling

One of the key elements in the clean up program will be the construction of four compost and waste recycling plants. This project will of course be complemented by the introduction of conventional refuse collection service, with classification of waste (to separate out the degradable and reusable items) throughout the metropolitan area, said Manuel Sanches, chairman of a committee set up to supervise the program's implementation.

The four waste processing plants will have the capacity to handle a daily throughput of 4,810 tons. Half of this volume will be dumped in landfills after processing, while the other half will be used as compost.

Another problem under study is the impact of the leachate produced by decomposition of the organic matter disposed of in squatter settlements and lower-class neighborhoods. Every day, four tons of this liquor are discharged into the bay, according to Comlurb, which has commissioned a study of the environmental impact of leachate from the Federal University of Rio de Janeiro and hopes to produce a solution to this problem too.