KOCHI

Dangers of dioxins loom large over Brahmapuram

Public health at stake

What are dioxins?

- Dioxins are highly toxic chemical compounds which are harmful to health. They also are known as Persistent Organic Pollutants (POPs)

CSIR NIIST study findings

- Toxic equivalents found in residual ash samples – 158.5 ng TEQ per kg
- Dioxin levels at Brahmapuram are **3 times** higher than those at Perungudi, an infamous dumpyard in Chennai
- Average dioxin levels in ambient air are 10.3 pg TEQ/ m3 at a distance of 50 m to 100 m from the fire

The massive fire at the Brahmapuram dumping yard in February this year. FILE PHOTO

Recommendations

- Establishment of modern solid waste treatment plants
- Clearing dumpyards of wastes by 'bio-mining'
- Analysis of dioxins in animal origin food samples such as milk, egg, and meat

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Dioxin levels found to be in the range of those in infamous dumping sites across the world

The levels of dioxin observed in residual ash samples analysed after the major fire at Brahmapuram on February 23 were in the range observed in various infamous waste dumping sites in Vietnam, Philippines, Cambodia, Netherlands, Greece, and the United States.

This was revealed in a study conducted by the CSIR-National Institute for Interdisciplinary Science and Technology (CSIR-NIIST). The research team had carried out an on-site ambient air and residual ash sampling on February 24. Dioxins are highly toxic chemical compounds which are harmful to health, and they are known as Persistent Organic Pollutants (POPs).

“The average concentration of 158.5 ng TEQ (toxic equivalents)/kg observed in residual ash samples at Brahmapuram is in the range of dioxin levels observed in various infamous dumping sites of the world such as Vietnam, Philippines, Cambodia, Netherlands, Greece, and the USA. The dioxin levels reported at an infamous dumpyard soil in India at Perungudi in Chennai is 52 ng TEQ/kg. The level observed at Brahmapuram is about 3 times higher than that at Perungudi,” the study report said.

The report prepared by the environmental technology division of the CSIR-NIIST found that the average dioxin levels observed in ambient air was 10.3 pg TEQ/ m3 at a distance of 50 metres to 100 metres from the fire. The observed levels are 50 and 10 times higher than reference and field blank data.

The Brahmapuram residue ash has a dioxin content of 159 ng TEQ/kg of ash. It is comparable with the results obtained from the ‘Burnhut studies’ (101.9 and 136.9 ngTEQ/kg of waste) conducted at the CSIR-NIIST. The quantity of dioxins emitted during the fire at Brahmapuram is 72 milligram toxicity equivalence. The figure was arrived at by using the emission factors determined in Burnhut studies, it said.

The report recommended the setting up of modern solid waste treatment plants and clearing of dumpyards of wastes by ‘bio-mining’ to separate combustible and inert materials. Given the widespread burning of waste and dumpyard fires, the study recommended an analysis of dioxins in animal origin food samples such as milk, egg, and meat and human milk.

Researchers said several such fire breakouts had occurred in the past and were still occurring intermittently at Brahmapuram as well as at several small, medium and large-scale municipal solid waste open dumpyards across the State and the country.

The study findings indicate that alarmingly high levels of dioxins are getting emitted from such anthropogenic activities across the country. The possible health consequences of human exposure to these highly toxic POPs are a matter of great concern, researchers said.

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