

Household pollutants detected around Antarctic stations

Australian Antarctic stations are rethinking their operational practices after the discovery that common household pollutants are dispersing from Casey station into the local Antarctic environment.



Credit: Micky Loederman

Research published in *Environmental Science and Technology*, and led by Dr Susan Bengtson Nash from Griffith University, records the first evidence of the dispersal of these pollutants from local sources – such as furnishings and electronic equipment – in the Australian Antarctic Territory.

Australian Antarctic Division ecotoxicologist and a co-author on the paper, Dr Catherine King, said persistent organic pollutants or POPs are known to reach the poles from other parts of the world through the atmosphere.

‘What this study shows it that human activity in polar regions has increased the potential for the direct introduction of these long-lived, “bioaccumulative” and toxic chemicals into the environment,’ she said.

The level of POPs detected at Casey are similar to levels found in homes and offices in Australia. However, it is hoped the study will provide information that will help Australia and other countries identify local sources of POPs that can be reduced or eliminated.

‘We’ve already started the process of carefully selecting building materials and consumer products, such as personal care products, food packaging, clothing, carpets and electrical appliances, to minimise the potential introduction of toxic substances into the Antarctic environment,’ Dr King said.

‘This study provides a baseline from which future improvements in our operational practices, use of building materials and consumer products on station can be measured.’

The international research team collected and analysed a range of samples from around Casey station – indoor dust from four buildings, mosses and lichens in the immediate station vicinity, local soil, effluent discharged from the station's wastewater treatment plant, and samples of sediment, phytoplankton, amphipods and fish from the marine environment.

‘The study obtained the first evidence of the presence of perfluoroalkylated substances (PFASs) in the Antarctic environment; chemicals commonly found in non-stick coatings and on waterproof clothing worn by expeditioners,’ Dr King said.

‘Another chemical group called polybrominated diphenyl ethers (PBDEs), found in electronic equipment, textiles and fire-fighting foam, was also prevalent in indoor dust, and the terrestrial and marine environments near the station.’

Both these chemical families are common in Australian homes and offices and are listed under the Stockholm Convention as chemicals that should be ‘restricted’, in the case of PFASs, and ‘eliminated’ in the case of PBDEs.

Dr Bengtson Nash said the study places Australia at the forefront of chemical management efforts in the region by alerting the international community to the fact that POP pollution comes from both distant hemispheric sources and local activities.

Source: Australian Antarctic Division

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