

Metals from cigarette butts may pose potential threat to marine environment

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Credit: Vera Kratochvil/public domain

Littered cigarette butts may be an important source of metal contaminants leaching into the marine environment and potentially entering the food chain, suggests research published online in the journal *Tobacco Control*.

Cigarette butts are the most common form of litter found in the marine

environment, with an estimated 5 trillion or so discarded outdoors around the globe every year. Previous research has also suggested that metals can leach from cigarette butts.

To gain an understanding of the potential implications, levels of metals in cigarette butts were monitored at nine different locations along the north part of the Persian Gulf in the Bushehr seaport coastal areas during the summer of 2015.

The metals assessed included cadmium (Cd), iron (Fe), arsenic (As) nickel (Ni), copper (Cu), zinc (Zn) and manganese (Mn) from discarded cigarette butts in the top 10 cm of sediment and deposited at the tidal mark on the beaches.

The [metal content](#) was measured twice, with a period of 10 days in between, to gauge the potential impact of marine currents on levels.

The levels of each of the metals varied considerably: from 79.01 ug/g to 244.97 ug/g for iron and 38.29 to 123.1 ug/g for manganese, for example. Arsenic levels varied from 0.12 ug/g to 0.48 ug/g.

But there was little significant change in levels between the two assessments, irrespective of where the samples had been taken.

Metal content is likely to vary according to the cultivation and growth of the tobacco leaf and the application of pesticides and weed killers. Additional metals may be added during cigarette manufacture and/or during the application of brightening agents on the wrapping paper, say the researchers.

Cigarette filters, which are made of cellulose acetate, may act like other plastics in providing a conduit to transport metals in marine environments, they suggest.

The response of animal and plant life to metal content is highly variable, they point out. "Whereas elevated concentration of heavy and trace metals in water and soils can adversely affect some species, contamination may increase the [metal](#) tolerance of other organisms," they write.

"Considering the estimated amount of cigarette butts littered annually (4.95 trillion), the release of metals from littered cigarette butts in the marine environment may increase the potential for acute harm to local species and may enter the [food chain](#)," they suggest.

But more research is needed to understand fully the leaching behaviour of metals from cigarette butts into the [marine environment](#), they emphasise.

But in the meantime, they conclude: "Enhanced public awareness about the toxicity of discarded cigarette butts in the marine and coastline areas may help to decrease the environmental hazards of [cigarette butts](#) in these areas."

More information: Association of metals (Cd, Fe, As, Ni, Cu, Zn and MN) with cigarette butts in northern part of the Persian Gulf, *Tobacco Control*, [DOI: 10.1136/tobaccocontrol-2016-052931](https://doi.org/10.1136/tobaccocontrol-2016-052931)

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