

Pet tags link widely used flame retardant to hyperthyroidism in cats

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Silicone pet tags, seen here in purple, helped researchers measure housecats' exposure to flame retardants. Credit: Adapted from *Environmental Science & Technology* 2019, DOI: 10.1021/acs.est.9b02226

Feline hyperthyroidism is the most common endocrine-related disease of older cats, and its prevalence has skyrocketed since the first case was diagnosed in 1979. At the same time, new household flame retardants

were introduced, and recently, scientists have suspected a link. Now, researchers reporting in ACS' *Environmental Science & Technology* have associated hyperthyroidism with another class of flame retardants, using silicone pet tags similar to the popular wristbands that many people wear for charitable causes.

In the mid-1970s, manufacturers began to put polybrominated diphenyl ethers (PBDEs) into textiles, polyurethane foam, plastics and electronics. But in 2004, U.S. manufacturers started voluntarily phasing out these flame retardants amidst environmental and health concerns. Alternatives including organophosphate esters (OPEs), such as tris(1,3-dichloroisopropyl) phosphate (TDCIPP), were added instead, but recent research suggests these flame retardants, like PBDEs, can act as endocrine disruptors. Prior research suggested a link between PBDE levels and feline hyperthyroidism, but so far OPEs have not been examined in this context. Kim Anderson and colleagues wondered if they could use silicone pet tags to assess hyperthyroid and non-hyperthyroid housecats' exposure to various flame retardants, including OPEs. Silicone picks up volatile and semi-volatile organic compounds, and wristbands made of the material have been used in previous studies to monitor [human exposure](#) to environmental chemicals.

To find out, the researchers recruited owners of 78 housecats seven years and older, half with hyperthyroidism and half without, to allow their pets to participate in the study. They gave the cats' owners silicone tags to put on their pets. After the cats had worn the tags for seven days, the researchers analyzed the [silicone](#) and found higher levels of TDCIPP from those cats with hyperthyroidism. Among non-hyperthyroid cats, TDCIPP exposure correlated with serum concentrations of a hormone elevated in [hyperthyroidism](#). Higher TDCIPP exposures were associated with air freshener use, houses built since 2005 and cats that prefer to nap on upholstered furniture.

More information: "Silicone Pet Tags Associate Tris(1,3-dichloro-2-isopropyl) Phosphate Exposures with Feline Hyperthyroidism" *Environmental Science & Technology* (2019).
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