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Identification of broadleaf and coniferous trees as a primary source of acrolein

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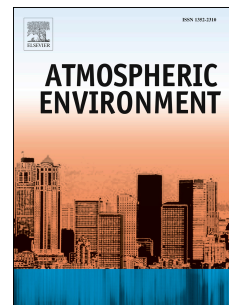
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1 Identification of Broadleaf and Coniferous Trees as a Primary Source of Acrolein

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10 compost,

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13 **Abstract:**

14 Ambient atmospheric acrolein is commonly associated with anthropogenic combustion
15 sources, but there is increasing evidence that acrolein has a non-combustion natural source that
16 contributes to a low, natural background of acrolein in remote regions. The objective of this
17 research was to determine the presence of acrolein from a probable natural source, namely
18 decaying leaf litter in forests. The first phase of this project surveyed leaf litter under five
19 conifer and eight broadleaf tree species to determine whether acrolein could volatilize from the
20 biomass that was present. Acrolein was detected in all species, but the concentrations were
21 higher in recently dropped biomass. The second phase of the project measured the changes in
22 acrolein concentration during the decomposition of fresh foliar biomass. The results showed a
23 dramatic decline in acrolein and other aldehydes during the first two weeks of composting. The

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