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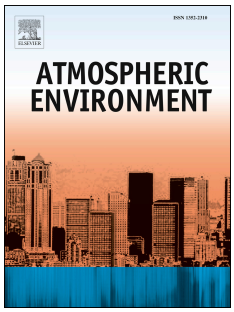

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Identification of Broadleaf and Coniferous Trees as a Primary Source of Acrolein

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Abstract:

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