

# Emission sources identified in Huon Study

August 24 2011

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Tasmanian study tracks fire emission sources in an air quality assessment in the Huon Valley. Credit: Willem van Aken, CSIRO

Emissions from domestic wood-fired heaters in southern Tasmania's Huon Valley dwarf emissions from forest regeneration burns, according to a new CSIRO study.

"Smoke plume events from prescribed burns do impact the [air quality](#) and occasionally exceed the 24-hour standard concentration for particulates but wood-fired heater [emissions](#) lead to particulate concentrations that are seven times greater than those from prescribed burns," said [atmospheric scientist](#) and project lead author, Dr. Mick Meyer.

"These results may surprise some residents but our studies found that although the intensity of emissions from [prescribed burns](#) and residential wood heaters was similar, emissions from wood heaters contributed 80 per cent to the atmospheric fine particle load, compared to 11 per cent

from regeneration burns. The remaining 9% was from fires lit by local landowners.

"Our study has shown a bigger impact on air quality at Geeveston than at Grove, indicating that particulate concentrations are influenced by local sources such as wood heaters rather than regional pollution."

The air quality study was commissioned by Forestry Tasmania after widespread complaints by Huon Valley residents about autumn regeneration burn-offs. The study is the first intensive air quality study in the valley and involved atmospheric monitoring at Geeveston and Grove.

Dr. Meyer said smoke from prescribed burning has been a subject of public debate as a major cause of pollution events, although there have been few data available to quantify its significance.

"We monitored air quality at two sites based on fine and coarse [particle emissions](#) between March, 2009 and September 2010.

"This monitoring clearly showed that at times measurements exceeded the national standards, particularly at times of prescribed burn-off and during winter when woodheaters are used. Emissions from residential heaters were the largest source of air-borne particles, contributing 80 per cent to the emissions load."

Woodheaters, and open burning on private land, emit smoke into the lower atmosphere (up to 1000 meters) where dispersion is poor. Regeneration burns are more complex; they are intended to produce an intense localised fire which consumes the heavy fuel load and generates a strong convection column that rises through the mixing layer and ideally into the free troposphere where smoke disperses out of the airshed.

The plume of smoke from a prescribed burn diminishes once fine and coarse fuels are consumed and burn intensity declines. The heavy fuels can burn for hours and days, but smoke remains near the surface and dispersion is limited.

Co-author, Dr. Fabienne Reisen, said emission impacts from burn-offs are short, ranging from several days to a week, with higher peak concentrations than wood-fired heater smoke.

"On the other hand, impacts of wood smoke from residential burning are of longer duration and particle concentrations often remain elevated for periods of months. These can be further impacted by unfavourable meteorological conditions such as temperature inversions in which smoke is trapped in valleys," Dr. Reisen said.

Provided by CSIRO

Citation: Emission sources identified in Huon Study (2011, August 24) retrieved 20 March 2024 from <https://phys.org/news/2011-08-emission-sources-huon.html>

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