

EXECUTIVE SUMMARY

Following the 2017 Northern California fires, we analysed 3 food production sites across Sonoma County at varying distances from the urban burn areas in Santa Rosa. We tested washed and unwashed samples of kale leaves, collected by community volunteers during the fire, as well as soil samples collected by community volunteers in June of 2018.

Our plant sample results confirm our hypothesis that there is low concern of health impacts from ingesting produce exposed to the Santa Rosa urban wildfire smoke of 2017. Our cumulative risk assessment further suggests that the cancer risk reduction due to the nutritional value of produce outweighs the maximum possible risk from ingesting wildfire-related contaminants on produce. However, our soil results suggest that more analysis is needed, particularly on dioxins in Santa Rosa soils. Our report provides additional information on best practices for further reducing risk and enhancing protective factors.

- Produce Summary: *low concern*
 - Produce samples did not have any detectable Polycyclic Aromatic Hydrocarbons (PAHs), or Polychlorinated Biphenyls (PCBs).
 - Produce did not have any detectable Dioxins and Furans in 12 out of 13 samples. The sample with detectable levels was still at a concentration below California's "No Significant Risk Level" threshold for determining chemical safety under Proposition 65.
 - Produce did not have any detectable Proposition 65-regulated heavy metals in 12 out of 13 samples. One sample contained nickel at levels that exceed the Prop 65 NSRL. No samples had detectable levels of lead, arsenic, mercury, or chromium.
- Soil Summary: *low concern overall, but more soil dioxin testing needed in Santa Rosa*
 - The site closest to the Santa Rosa fires had the highest levels of dioxins and furans, at levels that exceed EPA and OEHHA soil screening levels.
 - We are unable to confirm whether these contaminants were present before the fire or are a result of the fire.
 - Heavy metal soil concentrations were below Sonoma County's post-fire clean-up goals.
 - Soil samples did not have any detectable Polychlorinated Biphenyls (PCBs).
- General Notes: *the need for a balanced approach in assessing risk*
 - *Over long periods of time*, exposure to these chemical groups at very low levels can still contribute to health impacts, including at *levels below what our tests are able to detect*.
 - *Numerous health benefits including cancer risk reduction* have been attributed to green leafy vegetables. In this study, these benefits were found to outweigh the risk.
 - *Some individuals have higher risks* and should talk with their healthcare provider to better understand if they should take extra precautions. Individuals at higher risk may also benefit greatly from the high nutrition in green leafy vegetables and fresh produce.
 - *Best practices for reducing risk include*: wearing a respirator mask; washing produce thoroughly in running water; peeling root vegetables, testing soil regularly; containing and amending contaminated soil through sheet mulching, raised beds, and compost.
 - *Best practices that enhance protective factors* should also be pursued, such as increasing produce consumption to improve nutrition and promote resilience to chemical exposures.