



February 3, 2023

Dear Mayor Vinis and City Councilors,

Re: Gas industry misinformation and science denial around health risks of gas appliances

We are writing as members of the Fossil Free Eugene coalition regarding repeated misleading statements made by NW Natural and their representatives to this Council, on the issue of the health risks from gas appliances.

Background on industry misinformation around gas and public health

The [New York Times](#) published an article earlier this week,¹ which identifies NW Natural's use of a paid consultant, Dr. Julie Goodman, from the private consulting firm Gradient, to cast doubt on the scientific literature around gas appliance health impacts. The article notes that Dr. Goodman failed to disclose her paid affiliation with NW Natural when giving testimony at a Multnomah County public hearing on the health impacts of gas appliances. The article also highlights that Dr. Goodman and other consultants from Gradient are routinely engaged by companies and front groups within the

¹ Attached for convenience and to avoid paywalls.

fossil fuel, tobacco and other major polluting industries to provide testimony that seeks to undermine the case for health regulations.²

The revelations in this article should not surprise anyone working on building electrification in Eugene.³ NW Natural and their allies have repeatedly spread misinformation in our community around the science of air quality impacts from gas appliances. For instance, we are aware that another representative from Gradient, David Dodge, wrote a letter to Eugene City Council on November 29, 2022, which casted doubt on the scientific literature around gas appliance health impacts, and that this letter was [resubmitted](#) to the State Legislature’s Joint Task Force On Resilient Efficient Buildings in December, 2022, and to Milwaukie City Council in response to its proposed (and later passed) building electrification resolution.⁴ NW Natural has commented [at least once](#) in the current media cycle around gas stoves, where it made a number of misleading claims about the state of the scientific literature. The American Gas Association – whose Board of Directors includes and was recently chaired by NW Natural CEO David Anderson – has led industry criticism of peer-reviewed science, and generally sowed doubt around the evidential basis for gas regulation.

In defense of their product and profits, and in opposition to the broader scientific and public health literature around gas stoves, gas industry representatives have repeated *ad-nauseum* the same handful of talking-points. We address these talking-points below, in the interests of debunking industry misinformation, and demystifying the state of the science in this area generally.⁵

Industry talking-point #1: cooking in-general poses health risks, not the appliance used when cooking

It is true that cooking, whether on an electric or gas cooktop, produces particulate pollution (PM_{2.5}). However, gas stoves emit additional pollutants⁶ – foremost Nitrogen Dioxide (NO₂) and other Nitrogen Oxides (NO_x), and even the carcinogen benzene (C₆H₆) – *which electric burners simply do*

² See, for example, [this 2016 report on Gradient’s activities](#).

³ See, for example, NW Natural Director of Renewable Resources Anna Chittum challenging the link between gas stoves and respiratory health in [her testimony to Eugene City Council](#) on November 21, 2022. Unlike Dr. Goodman, Chittum appears to have no relevant public health qualifications. The main points from her testimony are addressed in this letter.

⁴ See agenda packet [here](#) at pp. 91-92 and again at pp. 95-96 of the pdf. We note that NW Natural’s letter at pp. 93-94 reiterates many of the talking-points discussed in this letter, and makes additional misleading claims regarding the projected emissions savings in Eugene, which were addressed in our coalition’s December 16, 2022 letter to this Council (updated December 21, 2022).

⁵ A longer-form summary of the scientific information in this letter can be found in [Methane Gas: Health, Safety, Economic, and Climate Impacts](#) (2022), at pp. 19-26. See also Rocky Mountain Institute, Mothers Out Front, Physicians for Social Responsibility and Sierra Club, [Health Effects from Gas Stove Pollution](#) (2020).

⁶ [Research has shown](#) that gas stoves emit as many as 21 separate air pollutants. Poorly-maintained gas stoves may also leak elevated levels of carbon monoxide (CO).

not emit in any form. Among other peer-reviewed studies demonstrating this, the U.S. Environmental Protection Agency has estimated that homes with gas stoves have NO₂ concentrations that are 50-400% higher than homes with electric cooktops, depending on the size of home and duration of cooking. Crucially, evidence shows that gas stoves continue to emit methane and associated volatile organic compounds, including benzene, even when they are not in use.⁷

Industry talking-point #2: proper ventilation eliminates health risks from gas stoves

Ventilation – specifically, high-quality range hoods that vent air outdoors rather than circulating the air indoors – has been shown in the literature to limit PM_{2.5} levels from cooking. However, range hoods have not been shown to effectively limit NO₂ concentrations in the home.⁸ Moreover, many (particularly older) homes in Oregon with gas stoves do not have range hoods, and it can be assumed that even homes with high-quality range hoods are not necessarily using them each and every time they cook. And, as noted above, gas stoves continue to emit even when they are not in-use, whereas range hoods are typically only turned on during cooking. Finally, vented appliances produce large amounts of outdoor air pollution, with EPA data showing that, in Lane County, gas use in buildings produces approximately 226 tons of NO_x annually (approximately 128 tons from commercial and industrial buildings and 98 tons from residential buildings)⁹.

Industry talking-point #3: studies showing health impacts are “modeling exercises” without real-world measurements

This has been the gas industry’s primary talking-point to attempt to discredit a December, 2022 study by researchers at the Rocky Mountain Institute, University of Sydney, and the Albert Einstein College of Medicine (the Greunwald Study),¹⁰ which found that 12.7% of childhood asthma cases in the United States could theoretically be prevented if gas stove use was not present. The Greunwald study was published in a renowned, peer-reviewed public health journal. Its methodology is based on a well-established and defensible epidemiological tool called a “population attributable fraction” (PAF), which is used to calculate the portion of a disease that could theoretically be prevented if exposure to a given risk factor were eliminated. The PAF was calculated based on a previous, peer-reviewed study

⁷ See, for example, these peer-reviewed studies: [Lebel et al \(2022a\)](#); [Lebel et al \(2022b\)](#); and [Michanowicz et al \(2022\)](#).

⁸ This may be due to the specific molecular properties of NO₂ (i.e. it is heavier than air).

⁹ Emissions data from EPA 2017 National Emissions Inventory.

<https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data>. Appliance emission estimates include residential and commercial emissions for the gas, oil, and other fuel categories. Some commercial source classification codes have been excluded to avoid counting certain non-appliance sources like pipeline compressor stations and industrial-size boilers. All commercial nonpoint source emissions are included, and commercial point source emissions are included if they have input heat capacities less than 10 MMBtu/hr or if they are classified as space heaters.

¹⁰ [Greunwald et al., 2022](#).

from 2013 (the Lin study), which itself was a meta-analysis that reviewed the effects of gas stove cooking on childhood asthma across 41 other studies.

In short, the use of the PAF tool in the Greunwald study is defensible, and the calculations in the study are made possible, *because the link between gas appliance emissions and asthma risk is already so well established in the scientific literature by multiple lines of evidence*, including direct measurements in the home. The evidence is so clear that both the [American Medical Association](#) and the [American Public Health Association](#) have issued statements confirming the health concerns around gas stove use. The gas industry itself [has long acknowledged this relationship in internal communications](#), and went so far as to [develop a lower-NO₂-emitting stove decades ago](#).¹¹

Rather than attempting to discredit the *dozens* of studies published over the last decade that have found a relationship between gas stoves and air quality impacts, the gas industry's communications strategy is to nitpick the methods of whichever individual study is currently in the media cycle, as they have done repeatedly on previous occasions. This strategy comes straight from the corporate playbook previously used to deny the links between tobacco use and lung cancer, and between fossil fuels and climate change.

Industry talking-point #4: one study did not show a connection between gas stoves and health impacts

Again, rather than attempting to refute dozens of studies, the gas industry has repeatedly relied on a *single* study in support of its position that gas stoves are benign to human health (Wong et al., 2013, hereafter “Wong”).¹² This in-itself should raise eyebrows, however the Wong study also has its own shortcomings. Specifically, the study was based on a self-administered survey of children aged 13-14 and parents of children aged 6-7. The study did not measure emission levels or health effects in the homes of the respondents. The study combined data from 31 countries, thereby potentially failing to control for differences across countries in housing characteristics, ambient temperatures, and ventilation. While the study's results did not show a connection between gas stoves and asthma; those results also did *not affirmatively disprove* a connection.¹³

One of the Wong study's co-authors, Bert Brunekreef, a professor of environmental epidemiology at the Netherlands' Utrecht University who also co-authored the Lin study mentioned above, [has since expressed concerns about the Wong study's methodology](#). Specifically, that co-author has also gone on

¹¹ See also Rebecca Leber, [How the Fossil Fuel Industry Convinced Americans to Love Gas Stoves](#); (Mother Jones, June 17, 2021).

¹² Available here: <https://pubmed.ncbi.nlm.nih.gov/24429203/>.

¹³ Affirmatively disproving of this connection, at least in part, would require disproving that NO₂ exposure increases asthma risks and/or that gas appliances *cannot* produce sufficient indoor NO₂ concentrations to trigger asthma risks.

the record saying that the Lin study should “carry more weight” than the Wong study, and that the American Gas Association and other gas industry allies have been misusing the findings of the Wong study to further their agenda.

Conclusion

We hope the above information will assist this Council in responding to gas industry misinformation during ongoing public debate around gas infrastructure regulation and building electrification in Eugene. Given NW Natural and the wider gas industry’s track record of repeatedly spreading doubt around science in order to agitate for policy delay, the City must continue to resist industry attempts to slow its work on building electrification, and should pass the proposed ordinance on residential construction without delay. Please do not hesitate to reach out to us if we can provide further information on the scientific literature in this area.

Sincerely,

--

Patty Hine, 350 Eugene

Diane Hodiak, 350 Deschutes

Paige Hopkins, Beyond Toxics

Danny Noonan, Breach Collective

Bethany Cotton, Cascadia Wildlands

Eloise Navarro, Climate Justice League

Wendy Woods, Electrify Corvallis

Brian Stewart, Electrify Now

Jacob Trewé, Eugene-Springfield Democratic
Socialists of America

Reverend Dennis Reynolds, Interfaith
Earthkeepers Eugene/Springfield

Jerrel Brown, NAACP Eugene Springfield

Simone Crowe, Oregon Just Transition Alliance

Timothy Morris, Springfield Eugene Tenants
Association

Dylan Plummer, Sierra Club

Anne Pernick, SAFE Cities at Stand.earth

Sam Tyler, Sunrise Eugene