

March 4, 2024

Crested Butte South POA Board

I'd like to begin with complimenting Camp4 Coffee with their continued success and only wish more for this business.

However, with increasing business activity in our Village Center comes more pollution. A situation that should be easily resolved should our POA follow it's own rules and regulations.

Referring to:

“Section 1. 1.2.C. To Protect the Environment; Public Health; Safety and Welfare; Public Services, Facilities and Property.

To avoid or mitigate potential impacts caused by land development within the CB South Special Area, to the environment, to public services and facilities, property and public safety and welfare, and land use within the CB South Special Area and adjacent properties, to the maximum extent feasible.”

On any given day when CAMP4 Coffee roasts its coffee beans – sometimes 2 and 3 times a day – an area at least ½-square mile is filled with the release of resultant gases from this activity.

How do I know this? Because these gases fill the air around my house, in my house, and throughout the surrounding neighborhood.

This situation, under Section 4. Definitions, is considered, at least, a Nuisance.

“NUISANCE means an activity that arises from the unreasonable, unwarranted or unlawful use of property, working obstruction or injury on the right of another including property right, or on the general public.”

The public right being denied here is the right to breathe the natural surrounding fresh air, whether that be for one minutes, five minutes, ten minutes, or any other defined quantity. My home is at least a ¼-mile area from the generation of said Nuisance and it is “unreasonable” to qualify – whether one likes coffee or not – to have to endure breathing in the fumes from roasting one, two, three or any amount of times per day or night. Therefore, the unfiltered, unmitigated fumes from the CAMP4 facility must be determined, at the very least, to be a NUISANCE, under our POA covenants.

“5.3 Prohibited Uses.

B. Manufacturing uses are prohibited except that the following types of light manufacturing uses shall be permitted subject to the development minimizing and mitigating any adverse impacts to the community and there is a primary on-site retail use

2. Coffee roasting and manufacturing”

Yes, CAMP4 Coffee is a permitted use – and that is good. However, the residential neighborhood for more than ¼-mile is being negatively impacted by CAMP4’s roasting fumes and this is required to be minimized and mitigated, as according to the aforementioned covenant.

I would like to emphasize here that this is not a question of whether one likes or dislikes the odor of roasting coffee. The roasting fumes are a NUISANCE and must be minimized and mitigated

in accordance with our POA covenants. These roasting fumes are not minimized nor mitigated when I, and others, can smell these fumes over a ¼-mile distant from the source.

There is also the question as to whether or not coffee-roasting are harmful. This is not necessarily an issue we need to resolve to take action on an obvious NUISANCE. However, there is a strong concern among many of us in the residential area directly impacted by the unmitigated roasting fumes.

I submit for reference one of numerous scientific articles on the study of the fumes from roasting coffee below:

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- 1) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7531227/>

Exposures and Emissions in Coffee Roasting Facilities and Cafés: Diacetyl, 2,3-Pentanedione, and Other Volatile Organic Compounds

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Associated Data

Supplementary Materials

Data Availability Statement

Go to:

Abstract

Roasted coffee and many coffee flavorings emit volatile organic compounds (VOCs) including diacetyl and 2,3-pentanedione. Exposures to VOCs during roasting, packaging, grinding, and flavoring coffee can negatively impact the respiratory health of workers. Inhalational exposures to diacetyl and 2,3-pentanedione can cause obliterative bronchiolitis. This study summarizes exposures to and emissions of VOCs in 17 coffee roasting and packaging facilities that included 10 cafés. We collected 415 personal and 760 area full-shift, and 606 personal task-based air samples for diacetyl, 2,3-pentanedione, 2,3-hexanedione, and acetoin using silica gel tubes. We also collected 296 instantaneous activity and 312 instantaneous source air measurements for 18 VOCs using evacuated canisters. The highest personal full-shift exposure in part per billion (ppb)

to diacetyl [geometric mean (GM) 21 ppb; 95th percentile (P95) 79 ppb] and 2,3-pentanedione (GM 15 ppb; P95 52 ppb) were measured for production workers in flavored coffee production areas. These workers also had the highest percentage of measurements above the NIOSH Recommended Exposure Limit (REL) for diacetyl (95%) and 2,3-pentanedione (77%). Personal exposures to diacetyl (GM 0.9 ppb; P95 6.0 ppb) and 2,3-pentanedione (GM 0.7 ppb; P95 4.4 ppb) were the lowest for non-production workers of facilities that did not flavor coffee. Job groups with the highest personal full-shift exposures to diacetyl and 2,3-pentanedione were flavoring workers (GM 34 and 38 ppb), packaging workers (GM 27 and 19 ppb) and grinder operator (GM 26 and 22 ppb), respectively, in flavored coffee facilities, and packaging workers (GM 8.0 and 4.4 ppb) and production workers (GM 6.3 and 4.6 ppb) in non-flavored coffee facilities. Baristas in cafés had mean full-shift exposures below the RELs (GM 4.1 ppb diacetyl; GM 4.6 ppb 2,3-pentanedione). The tasks, activities, and sources associated with flavoring in flavored coffee facilities and grinding in non-flavored coffee facilities, had some of the highest GM and P95 estimates for both diacetyl and 2,3-pentanedione. Controlling emissions at grinding machines and flavoring areas and isolating higher exposure areas (e.g., flavoring, grinding, and packaging areas) from the main production space and from administrative or non-production spaces is essential for maintaining exposure control.

Keywords: coffee roasting and packaging, cafe, exposure assessment, volatile organic compounds, diacetyl, 2,3-pentanedione (acetyl propionyl)

Roasting coffee exposes it to high temperatures, which creates the carcinogens acrylamide (5,13,33), furan (3,17,28), polycyclic aromatic hydrocarbons (6,15,19), and many other compounds.

2) <https://pubmed.ncbi.nlm.nih.gov/33035858/>

Comparative evaluation of acrylamide and polycyclic aromatic hydrocarbons contents in Robusta coffee beans roasted by hot air and superheated steam

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Affiliations expand

PMID: 33035858 DOI: 10.1016/j.foodchem.2020.128266

Abstract

Although hot air (HA) is a conventional roasting medium for coffee beans, HA roasting is known to result in possible formation of toxic compounds, including acrolein, acrylamide and polycyclic aromatic hydrocarbons (PAHs). Superheated steam (SHS) roasting is therefore proposed as an alternative means to alleviate the formation of these toxic compounds in roasted coffee beans. Robusta coffee beans were roasted either with HA or SHS in a fluidized bed roaster at 210-250 °C until the bean color reached the targeted roast levels. The contents of acrolein, acrylamide and 16 PAHs in the roasted beans were determined; only acrylamide and 5 PAHs were nevertheless found. SHS roasting interestingly resulted in lower acrylamide contents in dark-roasted beans; similar trend was noted in the beans medium-roasted at 250 °C. The contents of three-ring PAHs, namely fluorene, phenanthrene and anthracene, in dark-roasted beans were significantly lower upon SHS roasting at 250 °C.

3) <https://pubmed.ncbi.nlm.nih.gov/33641967/>

Degrees of roasting

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PMID: 33641967 DOI: 10.1016/j.foodres.2020.110089

Free article

Abstract

During the coffee beans roasting process, occurs the formation of polycyclic aromatic hydrocarbons, which are associated with the incidence of cancer in humans. This study aimed to evaluate the influence of coffee bean quality and roasting degree regarding mutagenicity, cytotoxicity and genotoxicity. Six samples of coffee drink made with roasted and ground *Coffea arabica* beans from different qualities and roast degrees were used after freeze-drying. Both commercial and special quality grains suffered light, medium and dark roasting. According to the Salmonella/microsome assay, the highest concentration of commercial grain sample (dark roast) significantly increased the number of revertants of the TA98 strain in the absence of metabolization. All the samples induced cytotoxicity to HepG2 cells. These effects can be ranked in the following order from most to least toxic: medium roast - special grain > light roast - special grain > dark roast - commercial grain > dark roast - special grain > light roast - commercial grain > medium roast - commercial grain. None of the samples induced genotoxicity in HepG2 cells. Our findings show that the harmful effects of coffee depend not only on the degree of roasting but also on the grain quality.

4) <https://pubmed.ncbi.nlm.nih.gov/37107868/>

Thermal Contaminants in Coffee Induced by Roasting: A Review

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PMID: 37107868 PMCID: PMC10138461 DOI: 10.3390/ijerph20085586

Free PMC article

Abstract

Roasting is responsible for imparting the main characteristics to coffee, but the high temperatures used in the process can lead to the formation of several potentially toxic substances. Among them, polycyclic aromatic hydrocarbons, acrylamide, furan and its derivative compounds, α -dicarbonyls and advanced glycation end products, 4-methylimidazole, and chloropropanols stand out. The objective of this review is to present a current and comprehensive overview of the chemical contaminants formed during coffee roasting, including a discussion of mitigation strategies reported in the literature to decrease the concentration of these toxicants. Although the formation of the contaminants occurs during the roasting step, knowledge of the coffee production chain as a whole is important to understand the main variables that will impact their concentrations in the different coffee products. The precursors and routes of formation are

generally different for each contaminant, and the formed concentrations can be quite high for some substances. In addition, the study highlights several mitigation strategies related to decreasing the concentration of precursors, modifying process conditions and eliminating/degrading the formed contaminant. Many of these strategies show promising results, but there are still challenges to be overcome, since little information is available about advantages and disadvantages in relation to aspects such as costs, potential for application on an industrial scale and impacts on sensory properties.

Keywords: Maillard reaction; Rubiaceae; carcinogens; food processing; public health; toxicity.

5) <https://pubmed.ncbi.nlm.nih.gov/35226750/>

Safest Roasting Times of Coffee To Reduce Carcinogenicity

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PMID: 35226750 DOI: 10.4315/JFP-21-427

Free article

Abstract

Abstract: Roasting coffee results in not only the creation of carcinogens such as acrylamide, furan, and polycyclic aromatic hydrocarbons but also the elimination of carcinogens in raw coffee beans, such as endotoxins, preservatives, or pesticides, by burning off. However, it has not been determined whether the concentrations of these carcinogens are sufficient to make either light or dark roast coffee more carcinogenic in a living organism. An Ames test was conducted on light, medium, and dark roast coffee from three origins. We found that lighter roast coffee shows higher mutagenicity, which is reduced to the control level in dark roast coffee varieties, indicating that the roasting process is not increasing mutagenic potential but is beneficial to eliminating the existing carcinogens in raw coffee beans. This result suggests that dark roast coffee is safer and promotes further studies of the various carcinogens in raw coffee that have been burned off.

Keywords: Ames test; Carcinogen; Coffee; Roasting.

Therefore, I submit to the POA today that there is a need and a necessity to act promptly in enforcing its own covenants and inform CAMP4 Coffee that it is in violation of our POA covenants. I am not requesting fines or any kind of penalties. I am simply asking that CAMP4 institute as quickly as possible the necessary mitigation to curtail its roasting fumes from pervading throughout our residential and Village Center areas; and, that specific plans be

submitted with specific and necessary mitigating equipment to curtail the daily release of said coffee-roasting fumes, accompanied by specific dates when this mitigation shall be fully and functionally implemented.

Thank you,

Brian Levine

Crested Butte South