Wildfire impact on indoor and outdoor PAH air quality

Environmental Science & Technology

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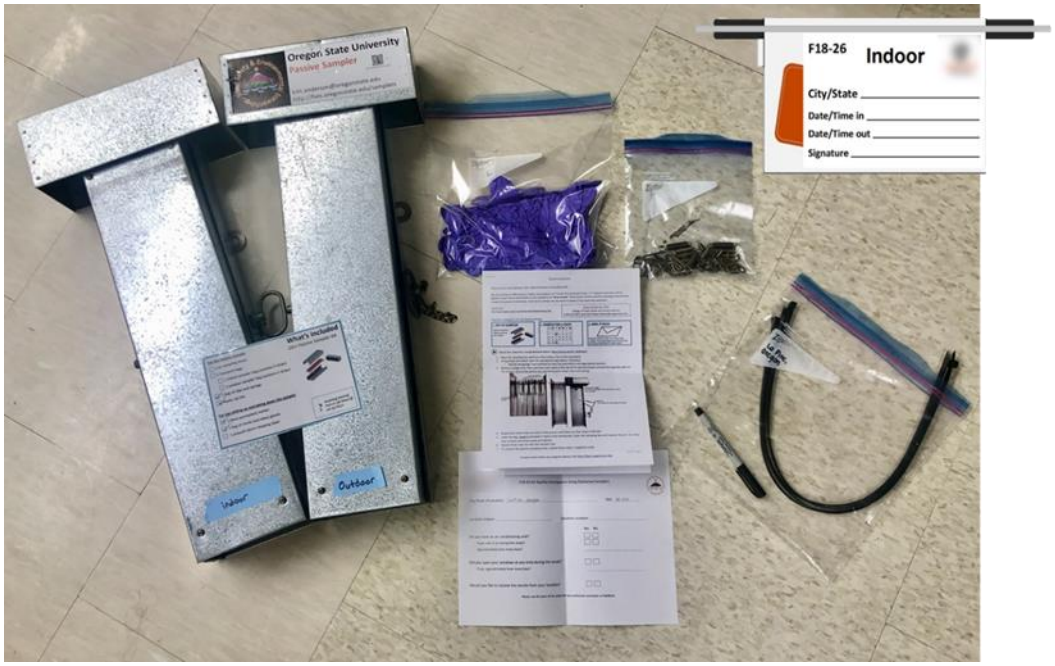

Figure S1. Wildfire sampling kit materials for community members.
Sampling kits include 2 air cages and two sets of passive sampling strips (one for indoor and one for outdoor), a checklist of all kit materials, gloves to deploy and retrieve passive samplers, springs and clips to deploy samplers in the cages, an instruction packet, a paper survey, permanent marker to record all information and zip-ties to attach the outdoor sampling cage to a fence or tree. The Food Safety and Environmental Stewardship logo was created by and is the property of Dr. Kim Anderson.

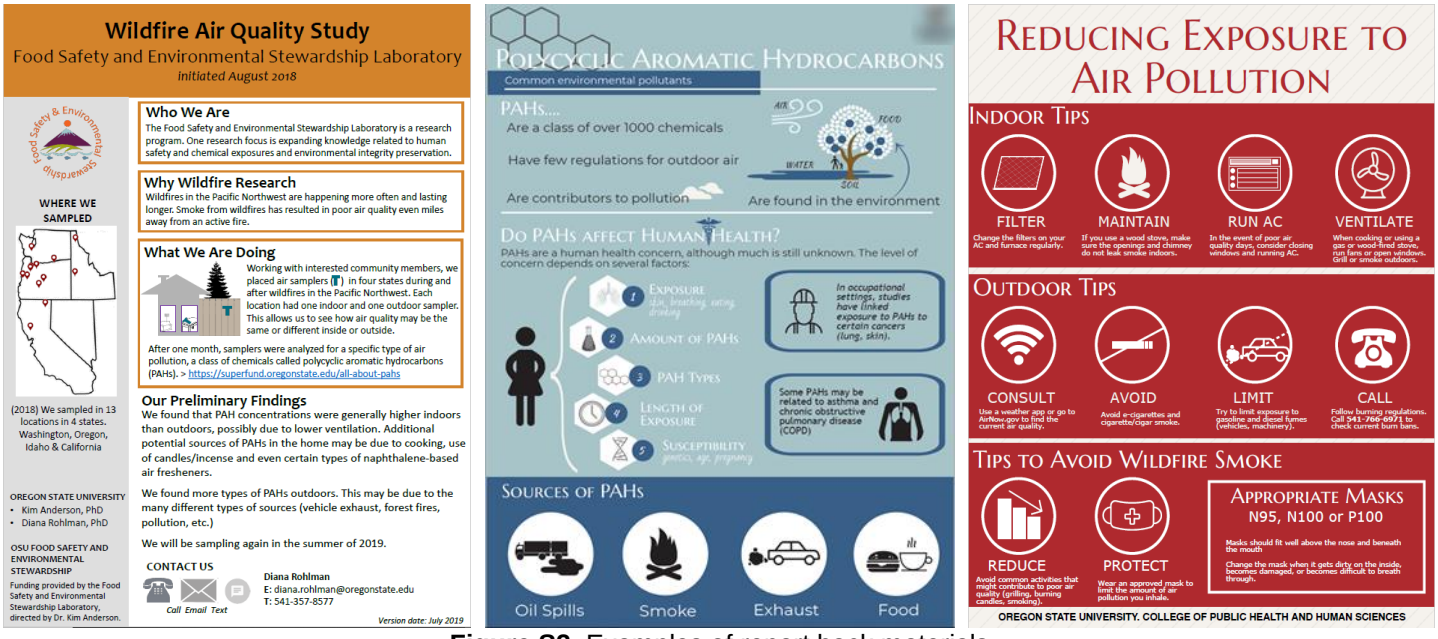

Figure S2. Examples of report back materials.
1) study and result summary, 2) what are polycyclic aromatic hydrocarbons (PAHs) and common sources and 3) ways to reduce exposure to PAHs. The Food Safety and Environmental Stewardship logo was created by and is the property of Dr. Kim Anderson.

Table S1. Performance reference compound mass per strip (n=3).

Analyte	Mean mass per LDPE strip (ng)	Relative standard deviation
fluorene-d10	30100	11%
pyrene-d10	1910	12%
benzo[b]fluoranthene-d12	1790	26%

Table S2. Mean concentration in ng/mL for quality control samples accounting for potential background from the laboratory and/or the field. If necessary, QC blank samples were used for sample concentration correction via background subtraction.

Analyte	Laboratory Blank QC Samples (n=12)	Field Trip Blank Samples (n=3)
naphthalene	19.1	8.74
2-methylnaphthalene	8.44	7.24
1-methylnaphthalene	6.30	4.57
2-ethylnaphthalene	4.52	4.08
2,6-dimethylnaphthalene	4.21	N/A
1,6 and 1,3-dimethylnaphthalene	6.99	7.24
1,4-dimethylnaphthalene	2.00	N/A
fluorene	75.1	2.95
dibenzothiophene	0.394	0.518
phenanthrene	96.3	7.00
2-methylphenanthrene	N/A	3.16
fluoranthene	194	N/A
retene	N/A	0.865

Table S3. Unsubstituted PAH physicochemical properties.

Analyte	CAS	MW (g mol^{-1})	log K_{ow}[a]	log K_{oa}[b]	H_{298} (atm m^3 mol^{-1})[c]
fluorene-d10 (PRC)	81103-79- 9	176.2	4.18	6.59	$6.83x10^{-3}$
pyrene-d10 (PRC)	1718-52-1	212.1	4.88	8.19	$3.39x10^{-4}$
benzo[b]fluoranthene-d12 (PRC)	205-99-2	264.2	5.78	10.4	$3.31x10^{-5}$
naphthalene	91-20-3	128.2	3.30	5.05	$5.26x10^{-4}$
2-methylnaphthalene	91-57-6	142.2	3.86	5.53	$5.80x10^{-4}$
1-methylnaphthalene	90-12-0	142.2	3.87	5.55	$5.80x10^{-4}$
2-ethylnaphthalene	939-27-5	156.1	4.38	6.04	$7.71x10^{-4}$
2,6-dimethylnaphthalene	581-42-0	156.2	4.31	5.89	$6.41x10^{-4}$
1,6-dimethylnaphthalene & 1,3-dimethylnaphthalene	575-43-9 & 575-41-7	156.2	4.44	6.02	$2.29x10^{-4}$
1,4-dimethylnaphthalene	571-58-4	156.2	4.37	6.17	$6.41x10^{-4}$
1,5-dimethylnaphthalene	571-61-9	156.2	4.38	6.22	$6.41x10^{-4}$
1,2-dimethylnaphthalene	573-98-8	156.2	4.31	5.89	$6.41x10^{-4}$
1,8-dimethylnaphthalene	569-41-5	156.2	4.26	6.22	$6.41x10^{-4}$
2,6-diethylnaphthalene	59919-41-4	184.3	5.25	6.59	$1.13x10^{-3}$
acenaphthylene	208-96-8	152.2	3.94	6.27	$5.48x10^{-5}$
acenaphthene	83-32-9	154.2	3.92	6.04	$2.82x10^{-4}$
fluorene	86-73-7	166.2	4.18	6.59	$1.67x10^{-4}$
dibenzothiophene	132-65-0	184.3	4.38	7.24	$2.79x10^{-5}$
phenanthrene	85-01-8	178.2	4.46	7.22	$5.13x10^{-5}$
anthracene	120-12-7	178.2	4.45	7.09	$5.13x10^{-5}$
2-methylphenanthrene	2531-84-2	192.3	4.86	7.50	$5.67x10^{-5}$
2-methylanthracene	613-12-7	192.3	5.00	7.64	$5.67x10^{-5}$
1-methylphenanthrene	832-69-9	192.3	5.08	7.78	$5.67x10^{-5}$
9-methylanthracene	779-02-2	192.3	5.07	7.87	$5.67x10^{-5}$
3,6-dimethylphenanthrene	1576-67-6	206.3	**5.44**	8.03	$6.25x10^{-5}$
2,3-dimethylanthracene	613-06-9	206.3	**5.44**	8.03	$6.25x10^{-5}$
fluoranthene	206-44-0	202.3	5.16	8.60	$8.30\ x10^{-6}$
9,10-dimethylanthracene	781-43-1	206.3	5.69	8.28	$6.25x10^{-5}$
pyrene	129-00-0	202.3	4.88	8.19	$8.30x10^{-6}$
retene	483-65-8	234.3	**6.35**	8.67	$1.10x10^{-4}$
benzo[a]fluorene	238-84-6	216.2	5.40	8.36	$1.63x10^{-5}$
benzo[b]fluorene	243-17-4	216.2	5.77	9.57	$1.63x10^{-5}$
benzo[c]fluorene	205-12-9	216.2	**5.19**	8.37	$1.63x10^{-5}$
1-methylpyrene	2381-21-7	216.3	**5.48**	8.91	$9.16x10^{-6}$
benz[a]anthracene	56-55-3	228.3	5.76	9.07	$5.01x10^{-6}$
cyclopenta[cd]pyrene	27208-37-3	226.3	**5.70**	10.15	$8.65x10^{-7}$
triphenylene	217-59-4	228.3	5.49	10.69	$5.01x10^{-6}$
chrysene	218-01-9	228.3	5.81	9.48	$5.01x10^{-6}$
6-methylchrysene	1705-85-7	242.3	**6.07**	9.72	$5.53x10^{-6}$
5-methylchrysene	3697-24-3	242.3	**6.07**	9.72	$5.53x10^{-6}$
benzo[b]fluoranthene	205-99-2	252.3	5.78	10.35	$8.10x10^{-7}$
7,12-dimethylbenz[a]anthracene	57-97-6	256.3	5.80	9.61	$6.10x10^{-6}$
benzo[k]fluoranthene	207-08-9	252.3	6.11	10.73	$8.10x10^{-7}$
benzo[j]fluoranthene	205-82-3	252.3	**6.11**	10.59	$8.10x10^{-7}$
benz[j]aceanthrylene & benz[e]aceanthrylene	202-33-5 & 199-54-2	252.3	**6.29**	10.96	$5.23x10^{-7}$

benzo[e]pyrene	192-97-2	252.3	6.44	11.35	$8.10x10^{-7}$
benzo[a]pyrene	50-32-8	252.3	6.13	10.86	$8.10x10^{-7}$
perylene	198-55-0	252.3	6.25	10.08	$8.10x10^{-7}$
indeno[1,2,3-cd]pyrene	193-39-5	276.3	**6.70**	11.55	$1.31x10^{-7}$
dibenzo[a,h]anthracene	53-70-3	278.4	6.75	11.78	$4.89x10^{-7}$
benzo[a]chrysene	213-46-7	278.4	7.11	11.81	$4.89x10^{-7}$
benzo[ghi]perylene	191-24-2	276.3	6.63	11.50	$1.31x10^{-7}$
anthanthrene	191-26-4	276.3	7.04	12.31	$1.31x10^{-7}$
naphtho[1,2-b]fluoranthene	111189-32-3	302.4	**7.28**	12.77	$7.28x10^{-8}$
naphtho[2,3-j]fluoranthene & naphtho[1,2-k]fluoranthene	205-83-4 & 238-04-0	302.4	**7.28**	12.77	$7.91x10^{-8}$
naphtho[2,3-b]fluoranthene	206-06-4	302.4	**7.28**	12.77	$7.91x10^{-8}$
dibenzo[a,e]fluoranthene	5385-75-1	302.3	**7.28**	12.77	$7.91x10^{-8}$
dibenzo[a,l]pyrene	191-30-0	302.3	7.71	13.20	$7.91x10^{-8}$
naphtho[2,3-k]fluoranthene	207-18-1	302.4	**7.28**	12.77	$7.91x10^{-8}$
naphtho[2,3-e]pyrene	193-09-9	302.4	**7.28**	12.77	$7.91x10^{-8}$
dibenzo[a,e]pyrene	192-65-4	302.4	7.71	13.20	$7.91x10^{-8}$
coronene	191-07-1	300.4	7.64	13.70	$2.12x10^{-8}$
dibenzo[e,l]pyrene	192-51-8	302.4	**7.28**	12.77	$7.91x10^{-8}$
naphtho[2,3-a]pyrene	196-42-9	302.4	**7.28**	12.77	$7.91x10^{-8}$
benzo[b]perylene	197-70-6	302.4	**7.28**	12.77	$7.91x10^{-8}$
dibenzo[a,i]pyrene	189-55-9	302.4	**7.28**	12.77	$7.91x10^{-8}$
dibenzo[a,h]pyrene	189-64-0	302.4	**7.28**	12.77	$7.91x10^{-8}$

[a] *Experimental values reported in* [1]
[b] *All values are KOAWIN v1.10* [1]
[c] *Henry's law constant at 298: estimated via the bond method for the unsubstituted PAH* [1]

Table S4. Instrument parameters.

65 PAH Method			
Carrier Gas			
Helium (99.99%)			
Oven Program		**Inlet Settings**	
hold 60°C for 1 min ramp 40°C/min to 180°C ramp 3°C/min to 230°C ramp 15°C/min to 280°C, hold for 10min ramp 6°C/min to 298°C ramp 16°C/min to 350°C, hold 4min Total run time: 47.25 min		**Mode**	Pulsed Splitless
		Injection Temperature (°C)	320
		Pulse Pressure	35 psi Until 0.3 min
		Purge Flow	25 mL/min at 0.7 min
Column Settings & Specifications		**MSD Settings**	
J&W Select PAH, Part # CP7462, L 30 m, ID 0.25 mm, Film 0.15 µm		**MSD Transfer Line Temp**	320°C
		Source Temp	340°C
Mode	Constant Flow	**Collision Gas (purity)**	Nitrogen (99.99%)
Flow Rate	2 mL/min	**Flow Rate**	1.5 mL/min

PAH environmental calculations

Time-weighted average concentrations for the air vapor phase are determined using an empirical uptake model as described by Huckins et al.[1] The air vapor phase C_a (ng/m^3) is calculated using the following equation:

$$C_a = \frac{N_{analyte}}{V_s K_{sa(T)}(1-e^{\left(-\frac{R_s E}{V_s K_{sa}}\right)})} \quad \text{Eq. S1}$$

where $N_{analyte}$ (ng) is the mass of the target compound in the sampler, V_s (cm^3) is the volume of the sampler, $K_{sa(T)}$ is the sampler-air partitioning coefficient, R_s is the PRC-derived sampling rate (m^3/day), and E is the exposure duration (days).

$K_{sa(298)}$ is derived by first calculating the sampler-water partition coefficient, which is estimated using an empirical relationship as described by Huckins et al.[1]:

$$\log K_{sw} = -2.61 + 2.321 * \log K_{ow} - 0.1618 * (\log K_{ow})^2 \quad \text{Eq. S2}$$

$K_{sa(298)}$ is then calculated using K_{sw} and the unitless Henry's law constant (H'_{298}) at 298 K as described by Lohmann[2]:

$$K_{sa(298)} = \frac{K_{sw}}{H'_{298}} \quad \text{Eq. S3}$$

The sampler-air partitioning coefficient is then temperature corrected as $K_{sa(T)}$ using the Van't Hoff equation[3-5]:

$$K_{sa(T)} = K_{sa} * exp^{\left(\frac{-\Delta H_{vap}}{R}\left(\frac{1}{T}-\frac{1}{298}\right)\right)} \quad \text{Eq. S4}$$

where R (8.31 x 10-3 kJ/mol·K) is the ideal gas constant, T (K) is the average temperature across the deployment period, and ΔH_{vap} is the enthalpy of vaporization (kJ/mol).

Sampling rates for target analytes in air (R_{sa}) are calculated using the PRC sampling rate ($R_{sa,PRC}$) in air. PRC sampling rate is calculated using the following equation[1]:

$$R_{sa,PRC} = -\frac{\ln(\frac{N}{N_0})}{E} K_{sa(T)} V_s \quad \text{Eq. S5}$$

where N (ng) is the mass of PRC remaining in the passive sampler after field deployment and N_0 (ng) is the mass of PRC in in the passive sampler prior to field deployment.

Sampling rates for target analytes are related to PRC sampling rates through the following equation:

$$R_{sa,analyte} = R_{sa,PRC} * \frac{\beta_{analyte}}{\beta_{PRC}} \quad \text{Eq. S6}$$

where β represents a compound specific function of K_{oa}:

$$\log \beta = 0.154 * \log K_{oa} - 0.80 \quad \text{Eq. S7}$$

Calculations for cancer and non-cancer risk assessment

Risk estimates were calculated as defined by the United States Environmental Protection Agency's (U.S. EPA) Human Health Evaluation Manual for Inhalation Risk Assessment[6] for residential exposure scenarios. For each sample, the exposure concentration was calculated for an individual PAH. The risk for each PAH was then summed to yield an estimate of total cancer risk and total hazard quotient for the PAHs in a sample. This method assumes independence of action across all compounds. For indoor air samples, exposure time was set to 21 hours/day based on results from the U.S. EPA National Human Activity Pattern Survey[7]. Outdoor samples had an exposure time of 3 hours/day. Exposure during was set to 18 years to reflect the average residential exposure scenario[6]. For comparisons before, during and after wildfires, the exposure frequency was set to 23 days. This exposure frequency represents the average number of sampling days across the entire study. For comparisons between indoor and outdoor air during wildfires, the exposure frequency was set to the number of days of smoke impact during sampling for each location. In all exposure scenarios the average lifetime was set at 70 years. All risk estimates assume exposed individuals are adults. Available IUR and RfC values were compiled for PAHs in our analytical method from federal and state databases[8-12]. Sources of toxicological information were prioritized based on the U.S. EPA's Office of Solid Waste and Emergency Response policy recommendations[13].

Exposure concentration is calculated using the following equation:

$$\mathrm{EC} = \frac{\mathrm{CA} * \mathrm{ET} * \mathrm{EF} * \mathrm{ED}}{\mathrm{AT}} \quad \text{Eq. S8}$$

where CA (μg/m^3) is the PAH concentration in air, ET (hours/day) is the exposure time, EF (days/year) is equal to the exposure frequency, ED (years) is the exposure dutation and AT (lifetime in years * 365 days/year * 24 hours/day) is the averaging time.

The excess inhalation cancer risk is estimated with the following equation:

$$\text{Risk} = \text{IUR} * \text{EC} \quad \text{Eq. S9}$$

where IUR (μg/ m^3)$^{-1}$ is the inahation unit risk and EC (μg/m^3) is the exposure concentration.

The inhalation hazard quotient is estimated with the following equation:

$$\text{Hazard Quotient} = \frac{\text{EC}}{\text{RfC}} \quad \text{Eq. S10}$$

Where RfC (mg/m^3) is the inhalation reference concentration.

Table S5. Inhalation unit risk (IUR) and reference concentration (RfC) values for risk assessment. Values were chosen based on EPA criteria (OSWER Directive 9285.7-53).

PAH	IUR (μg/m3)$^{-1}$	RfC (mg/m^3)
naphthalene	3.40E-05[1]	0.003[1]
1-methylnaphthalene	N/A	0.014[4]
2-methylnaphthalene	N/A	0.0033[4]
fluoranthene	2.10E-02[2]	N/A
benzo[c]fluorene	8.30E-05[2]	N/A
benz[a]anthracene	1.10E-04[3]	N/A
cyclopenta[cd]pyrene	4.20E-03[2]	N/A
chrysene	6.00E-07[3]	N/A
5-methylchrysene	1.10E+00[3]	N/A
benzo[b]fluoranthene	1.10E-04[3]	N/A
7,12-dimethylbenz[a]anthracene	7.10E+00[5]	N/A
benzo[k]fluoranthene	6.00E-06[3]	N/A
benzo[j]fluoranthene	1.10E+00[3]	N/A
benzo[a]pyrene	1.10E-03[1]	2.00E-06[1]
indeno[1,2,3-cd]pyrene	1.10E-04[3]	N/A
dibenzo[a,h]anthracene	1.20E-03[3]	N/A
benzo[ghi]perylene	1.90E-01[2]	N/A
anthanthrene	4.20E-03[2]	N/A
dibenzo[a,e]pyrene	1.10E-03[3]	N/A
dibenzo[a,h]pyrene	1.10E-02[3]	N/A
dibenzo[a,i]pyrene	1.10E-02[3]	N/A
dibenzo[a,l]pyrene	1.10E-02[3]	N/A

[1]EPA Integrated Risk Information System (IRIS)
[2]Oregon Department of Environmental Quality (OAR 340-245-8030)
[3]California EPA Air Toxics
[4]EPA CompTox Dashboard
[5]EPA Integrated Risk Information System (IRIS)

Air quality index (AQI) and National Oceanic and Atmospheric Administration (NOAA) smoke density

AQI and smoke density values were collected for each day and averaged over the sampling period. The NOAA hazard mapping system bins smoke density into three categories light (5 μg/m^3), medium (16 μg/m^3) and heavy (27 μg/m^3). N/A = not available N/S = not sampling.

Table S6. U.S. EPA AQI values before wildfires.

Day	St Helena, CA (n =25)	Richland, WA (n=22)	Seattle, WA 1 (n=22)	Alturas, CA (n=52)	Cobb, CA (n=22)	Sandpoint, ID (n=44)	Lake Oswego, OR (n=21)	Newport, OR (n=21)	Corvallis, OR 1 (n=36)
Monitor Distance (miles)	**20**	**10**	**5**	**54**	**42**	**5**	**9**	**50**	**5**
Day 1	30	16	52	19	33	19	27	18	23
Day 2	34	13	43	17	27	21	33	16	18
Day 3	50	12	32	7	17	29	24	16	12
Day 4	52	9	21	8	13	25	34	16	10
Day 5	24	10	24	10	16	36	28	11	14
Day 6	10	13	29	13	14	26	28	11	13
Day 7	7	13	36	13	18	27	15	12	19
Day 8	12	16	30	16	16	N/A	18	15	18
Day 9	20	15	30	18	20	10	27	15	16
Day 10	10	13	31	14	23	13	28	21	16
Day 11	18	13	31	20	20	17	25	16	16
Day 12	13	21	3	11	19	16	19	18	11
Day 13	6	14	25	23	29	12	19	17	11
Day 14	12	13	28	15	39	15	18	27	12
Day 15	15	9	39	18	15	9	19	20	15
Day 16	11	10	37	14	N/A	15	18	15	15
Day 17	26	9	41	17	21	18	17	16	21
Day 18	36	15	35	17	17	15	29	12	16
Day 19	24	21	56	33	11	20	26	10	18
Day 20	18	18	31	24	16	21	35	18	17
Day 21	29	10	81	15	N/S	21	39	27	27
Day 22	20	11	26	44	N/S	16	N/S	N/S	20
Day 23	22	N/S	N/S	27	N/S	15	N/S	N/S	15
Day 24	16	N/S	N/S	40	N/S	22	N/S	N/S	16
Day 25	20	N/S	N/S	20	N/S	21	N/S	N/S	12
Day 26	N/S	N/S	N/S	16	N/S	20	N/S	N/S	10
Day 27	N/S	N/S	N/S	14	N/S	12	N/S	N/S	18
Day 28	N/S	N/S	N/S	40	N/S	13	N/S	N/S	27
Day 29	N/S	N/S	N/S	54	N/S	23	N/S	N/S	19
Day 30	N/S	N/S	N/S	44	N/S	25	N/S	N/S	19
Day 31	N/S	N/S	N/S	58	N/S	34	N/S	N/S	30
Day 32	N/S	N/S	N/S	51	N/S	44	N/S	N/S	30
Day 33	N/S	N/S	N/S	49	N/S	38	N/S	N/S	27
Day 34	N/S	N/S	N/S	10	N/S	27	N/S	N/S	12
Day 35	N/S	N/S	N/S	13	N/S	29	N/S	N/S	17
Day 36	N/S	N/S	N/S	13	N/S	38	N/S	N/S	18
Day 37	N/S	N/S	N/S	15	N/S	15	N/S	N/S	N/S
Day 38	N/S	N/S	N/S	25	N/S	29	N/S	N/S	N/S
Day 39	N/S	N/S	N/S	28	N/S	55	N/S	N/S	N/S
Day 40	N/S	N/S	N/S	34	N/S	59	N/S	N/S	N/S
Day 41	N/S	N/S	N/S	38	N/S	63	N/S	N/S	N/S
Day 42	N/S	N/S	N/S	43	N/S	59	N/S	N/S	N/S
Day 43	N/S	N/S	N/S	13	N/S	48	N/S	N/S	N/S
Day 44	N/S	N/S	N/S	17	N/S	51	N/S	N/S	N/S
Day 45	N/S	N/S	N/S	42	N/S	N/S	N/S	N/S	N/S
Day 46	N/S	N/S	N/S	15	N/S	N/S	N/S	N/S	N/S
Day 47	N/S	N/S	N/S	48	N/S	N/S	N/S	N/S	N/S
Day 48	N/S	N/S	N/S	59	N/S	N/S	N/S	N/S	N/S

Day 49	N/S	N/S	N/S	28	N/S	N/S	N/S	N/S	N/S
Day 50	N/S	N/S	N/S	57	N/S	N/S	N/S	N/S	N/S
Day 51	N/S	N/S	N/S	60	N/S	N/S	N/S	N/S	N/S
Day 52	N/S	N/S	N/S	43	N/S	N/S	N/S	N/S	N/S
Average	**21**	**13**	**35**	**27**	**20**	**27**	**25**	**17**	**17**
Std Dev	**12**	**3**	**15**	**16**	**7**	**14**	**7**	**5**	**5**

Table S7. U.S. EPA AQI values during wildfires. N/A = not available N/S = not sampling.

Day	Carson, WA (n=21)	St Helena, CA (n=26)	Prineville, OR (n=40)	Alturas, CA (n=30)	Richland, WA (n=23)	Sunriver, OR (n=18)	Corvallis, OR 2 (n=14)	Seattle, WA 2 (n=14)	Lake Oswego, OR (n=16)	McCall, ID (n=23)	Newport, OR (n=10)	Sandpoint, ID (n=15)
Monitor Distance (miles)	**20**	**20**	**5**	**54**	**10**	**17**	**5**	**5**	**9**	**5**	**50**	**5**
Day 1	28	56	60	113	52	72	199	149	18	71	167	197
Day 2	20	10	70	79	51	57	515	99	67	77	171	282
Day 3	24	60	81	60	43	60	350	109	210	115	156	250
Day 4	24	119	56	73	43	260	260	202	287	192	53	249
Day 5	34	140	64	64	39	609	342	198	388	160	70	179
Day 6	24	128	30	52	77	507	325	207	485	136	17	154
Day 7	20	87	72	13	58	264	267	220	387	155	23	156
Day 8	13	61	73	61	75	276	191	236	282	154	12	95
Day 9	13	56	19	89	82	159	217	178	314	64	15	34
Day 10	24	64	35	138	223	187	275	146	242	78	18	26
Day 11	20	75	25	122	462	400	57	154	116	39	N/S	55
Day 12	18	121	34	53	376	199	15	19	25	43	N/S	18
Day 13	18	97	41	43	408	39	26	27	28	81	N/S	20
Day 14	18	20	53	22	346	28	36	45	89	72	N/S	20
Day 15	17	17	59	160	185	82	N/S	N/S	29	37	N/S	10
Day 16	15	59	65	173	177	85	N/S	N/S	61	37	N/S	N/S
Day 17	17	67	39	158	162	12	N/S	N/S	N/S	15	N/S	N/S
Day 18	13	104	53	157	40	13	N/S	N/S	N/S	8	N/S	N/S
Day 19	13	72	240	152	29	N/S	N/S	N/S	N/S	9	N/S	N/S
Day 20	11	73	164	158	39	N/S	N/S	N/S	N/S	23	N/S	N/S
Day 21	47	93	471	166	45	N/S	N/S	N/S	N/S	15	N/S	N/S
Day 22	N/S	152	346	155	53	N/S	N/S	N/S	N/S	22	N/S	N/S
Day 23	N/S	160	184	66	46	N/S	N/S	N/S	N/S	80	N/S	N/S
Day 24	N/S	170	300	63	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 25	N/S	168	251	54	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 26	N/S	178	292	97	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 27	N/S	N/S	221	76	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 28	N/S	N/S	48	48	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 29	N/S	N/S	56	29	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 30	N/S	N/S	68	9	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 31	N/S	N/S	62	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 32	N/S	N/S	11	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 33	N/S	N/S	13	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 34	N/S	N/S	9	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 35	N/S	N/S	16	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 36	N/S	N/S	15	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 37	N/S	N/S	19	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 38	N/S	N/S	29	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 39	N/S	N/S	29	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Day 40	N/S	N/S		N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Average	**21**	**93**	**95**	**90**	**135**	**184**	**220**	**142**	**189**	**73**	**70**	**116**
Std Dev	**8**	**48**	**108**	**51**	**136**	**175**	**146**	**72**	**154**	**55**	**68**	**98**

Table S8. U.S. EPA AQI values after wildfires. N/A = not available N/S = not sampling.

Day	Carson, WA (n=23)	Sunriver, OR (n=22)	Corvallis, OR 2 (n=22)	Seattle, WA 2 (n=22)	Richland, WA (n=22)	Seattle, WA 1 (n=22)	Cobb, CA (n=22)	McCall, ID (n=22)	Sandpoint, ID (n=24)	Lake Oswego, OR (n=22)	Prineville, OR (n=18)	Corvallis, OR 1 (n=29)
Monitor Distance (miles)	**20**	**17**	**5**	**0-2**	**10**	**5**	**42**	**5**	**5**	**9**	**5**	**5**
Day 1	40	12	16	23	22	24	19	15	22	14	37	13
Day 2	33	11	23	26	15	26	19	27	33	17	36	17
Day 3	57	15	23	39	12	24	24	32	13	18	40	23
Day 4	64	19	23	46	11	21	18	34	9	18	40	29
Day 5	33	20	23	60	9	25	21	42	13	18	39	31
Day 6	15	34	18	38	11	24	19	21	12	18	27	24
Day 7	13	24	16	48	17	25	13	21	19	17	19	20
Day 8	14	29	9	59	24	22	15	22	25	22	26	15
Day 9	18	46	20	63	14	26	7	15	13	14	26	15
Day 10	16	35	23	54	12	32	2	19	5	15	26	14
Day 11	17	38	17	51	16	32	9	11	7	18	19	16
Day 12	28	32	23	43	20	29	25	19	9	19	29	15
Day 13	23	54	38	38	14	23	26	22	N/A	24	33	30
Day 14	25	105	47	61	16	27	20	20	N/A	24	24	14
Day 15	29	99	51	78	10	32	27	17	4	19	31	12
Day 16	38	78	57	86	16	37	N/A	27	8	28	37	24
Day 17	N/A	67	30	67	17	42	15	21	3	26	28	19
Day 18	17	76	51	28	22	45	19	20	10	23	35	26
Day 19	28	89	71	33	24	41	20	16	15	29	N/S	19
Day 20	23	81	68	48	29	33	6	11	13	29	N/S	12
Day 21	25	52	72	59	21	42	N/A	13	9	32	N/S	19
Day 22	30	56	69	56	26	44	13	17	11	42	N/S	24
Day 23	38	N/S	N/S	N/S	N/S	N/S	N/S	N/S	8	N/S	N/S	38
Day 24	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	18	N/S	N/S	38
Day 25	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	50
Day 26	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	55
Day 27	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	60
Day 28	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	59
Day 29	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	38
Average	**28**	**49**	**36**	**50**	**17**	**31**	**17**	**21**	**13**	**22**	**31**	**27**
Std Dev	**13**	**29**	**21**	**16**	**6**	**8**	**7**	**8**	**7**	**7**	**7**	**14**

Table S9. NOAA hazard mapping smoke impact before wildfires. N/A = not available N/S = not sampling.

Day	St Helena, CA (n =25)	Richland, WA (n=22)	Seattle, WA 1 (n=22)	Alturas, CA (n=52)	Cobb, CA (n=22)	Sandpoint, ID (n=44)	Lake Oswego, OR (n=21)	Newport, OR (n=21)	Corvallis, OR 1 (n=36)
Day 1	None	None	None	Light	None	None	None	None	None
Day 2	None	Light	None	Light	Light	None	Light	None	None
Day 3	None	None	None	None	Light	None	None	None	None
Day 4	None	None	None	None	None	None	None	None	None
Day 5	None	None	None	None	None	None	None	None	None
Day 6	None	None	None	None	None	Medium	None	None	None
Day 7	None	None	None	None	None	None	None	None	None
Day 8	None	None	None	None	None	None	None	None	None
Day 9	None	None	None	None	None	None	None	None	None
Day 10	None	None	None	None	None	None	None	None	None
Day 11	None	None	None	Light	None	None	None	None	None
Day 12	None	None	None	None	None	None	None	None	None
Day 13	None	None	None	Light	None	None	None	None	None
Day 14	None	None	None	None	Light	Light	Medium	None	None
Day 15	None	None	None	None	None	None	None	None	None
Day 16	None	None	None	None	None	None	None	None	None
Day 17	None	None	None	None	None	None	None	Light	None
Day 18	None	None	None	Light	None	None	None	None	None
Day 19	None	Light	None	None	Light	None	None	None	None
Day 20	None	None	None	None	None	None	None	Light	None
Day 21	None	Light	None	None	Light	None	None	None	None
Day 22	None	None	None	None	None	None	N/S	N/S	None
Day 23	None	N/S	N/S	None	N/S	None	N/S	N/S	None
Day 24	None	N/S	N/S	None	N/S	Light	N/S	N/S	None
Day 25	None	N/S	N/S	None	N/S	None	N/S	N/S	None
Day 26	N/S	N/S	N/S	None	N/S	None	N/S	N/S	None
Day 27	N/S	N/S	N/S	Light	N/S	None	N/S	N/S	Light
Day 28	N/S	N/S	N/S	None	N/S	None	N/S	N/S	None
Day 29	N/S	N/S	N/S	None	N/S	None	N/S	N/S	None
Day 30	N/S	N/S	N/S	Light	N/S	None	N/S	N/S	None
Day 31	N/S	N/S	N/S	Light	N/S	None	N/S	N/S	Medium
Day 32	N/S	N/S	N/S	None	N/S	None	N/S	N/S	None
Day 33	N/S	N/S	N/S	None	N/S	Light	N/S	N/S	None
Day 34	N/S	N/S	N/S	None	N/S	None	N/S	N/S	None
Day 35	N/S	N/S	N/S	None	N/S	None	N/S	N/S	None
Day 36	N/S	N/S	N/S	None	N/S	None	N/S	N/S	Medium
Day 37	N/S	N/S	N/S	None	N/S	None	N/S	N/S	N/S
Day 38	N/S	N/S	N/S	None	N/S	None	N/S	N/S	N/S
Day 39	N/S	N/S	N/S	None	N/S	Medium	N/S	N/S	N/S
Day 40	N/S	N/S	N/S	None	N/S	None	N/S	N/S	N/S
Day 41	N/S	N/S	N/S	None	N/S	None	N/S	N/S	N/S
Day 42	N/S	N/S	N/S	None	N/S	None	N/S	N/S	N/S
Day 43	N/S	N/S	N/S	None	N/S	None	N/S	N/S	N/S
Day 44	N/S	N/S	N/S	None	N/S	None	N/S	N/S	N/S
Day 45	N/S	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S
Day 46	N/S	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S
Day 47	N/S	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S
Day 48	N/S	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S
Day 49	N/S	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S
Day 50	N/S	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S
Day 51	N/S	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S
Day 52	N/S	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S
Total None	**25**	**19**	**22**	**43**	**17**	**39**	**19**	**19**	**33**
Total Light	**0**	**3**	**0**	**8**	**5**	**3**	**1**	**2**	**1**
Total Medium	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**2**
Total Heavy	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Table S10. NOAA hazard mapping smoke impact during wildfires. N/A = not available N/S = not sampling.

Day	Carson, WA (n=21)	St Helena, CA (n=26)	Prineville, OR (n=40)	Alturas, CA (n=30)	Richland, WA (n=23)	Sunriver, OR (n=18)	Corvallis, OR 2 (n=14)	Seattle, WA 2 (n=14)	Lake Oswego, OR (n=16)	McCall, ID (n=23)	Newport, OR (n=10)	Sandpoint, ID (n=15)
Day 1	None	Heavy	Heavy	Heavy	Medium	Heavy	Heavy	Medium	Medium	Heavy	Light	Heavy
Day 2	Medium	Heavy	Heavy	Heavy	Heavy	Light	Heavy	Light	Heavy	Heavy	Light	Heavy
Day 3	Light	Heavy	Heavy	Heavy	Medium	Medium	Heavy	Medium	Medium	Medium	Heavy	Heavy
Day 4	Light	Heavy	Heavy	Heavy	Light	Heavy	Medium	Medium	Heavy	Heavy	Heavy	Heavy
Day 5	Medium	Heavy	Medium	Heavy	Medium	Medium	Heavy	Heavy	Heavy	Heavy	Heavy	Heavy
Day 6	Heavy	Heavy	Heavy	None	Medium	Heavy	Heavy	Heavy	Medium	Medium	Heavy	Heavy
Day 7	Heavy	Heavy	Heavy	None	None	Heavy	Heavy	Medium	Heavy	Heavy	Heavy	Heavy
Day 8	Heavy	Medium	Heavy	Light	Light	Heavy	Heavy	Medium	Heavy	Heavy	Heavy	Light
Day 9	Heavy	Heavy	Heavy	Heavy	Medium	Heavy	Heavy	Heavy	Heavy	Heavy	Heavy	None
Day 10	Medium	Heavy	None	Heavy	Medium	Heavy	Heavy	Heavy	Heavy	Heavy	Light	Light
Day 11	Heavy	Heavy	None	Heavy	Heavy	Heavy	Heavy	Heavy	None	None	Light	Light
Day 12	Medium	Heavy	Light	Medium	Heavy	Heavy	None	Light	Light	Light	Light	None
Day 13	Light	Heavy	Medium	Light	Heavy	None	Light	None	Light	Light	Medium	None
Day 14	Heavy	Heavy	Heavy	Light	Heavy	Light	None	None	Light	Light	None	None
Day 15	Heavy	Medium	Heavy	Light	Heavy	Heavy	N/S	N/S	None	None	Light	None
Day 16	Heavy	Heavy	Medium	Medium	Heavy	Medium	N/S	N/S	None	None	Light	N/S
Day 17	Heavy	Heavy	None	Heavy	Heavy	None	N/S	N/S	None	N/S	None	N/S
Day 18	Light	Heavy	Light	Heavy	Light	Light	N/S	N/S	None	N/S	None	N/S
Day 19	None	Heavy	Heavy	Heavy	Light	N/S	N/S	N/S	None	N/S	None	N/S
Day 20	Light	Heavy	Medium	Heavy	Light	N/S	N/S	N/S	Light	N/S	None	N/S
Day 21	Medium	Heavy	Heavy	Heavy	Light	N/S	N/S	N/S	Light	N/S	Medium	N/S
Day 22	N/S	Heavy	Heavy	Heavy	None	N/S	N/S	N/S	Light	N/S	Medium	N/S
Day 23	N/S	Heavy	Heavy	Medium	None	N/S	N/S	N/S	Heavy	N/S	Light	N/S
Day 24	N/S	Heavy	Heavy	Medium	N/S	N/S	N/S	N/S	Heavy	N/S	N/S	N/S
Day 25	N/S	Heavy	Heavy	Light	N/S	N/S	N/S	N/S	Medium	N/S	N/S	N/S
Day 26	N/S	Heavy	Heavy	Medium	N/S	N/S	N/S	N/S	Medium	N/S	N/S	N/S
Day 27	N/S	N/S	Heavy	Heavy	N/S	N/S	N/S	N/S	None	N/S	N/S	N/S
Day 28	N/S	N/S	None	Light	N/S	N/S	N/S	N/S	None	N/S	N/S	N/S
Day 29	N/S	N/S	Light	Light	N/S	N/S	N/S	N/S	Medium	N/S	N/S	N/S
Day 30	N/S	N/S	Heavy	None	N/S	N/S	N/S	N/S	Heavy	N/S	N/S	N/S
Day 31	N/S	N/S	Medium	N/A	N/S	N/S	N/S	N/S	None	N/S	N/S	N/S
Day 32	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S	None	N/S	N/S	N/S
Day 33	N/S	N/S	Light	N/S	N/S	N/S	N/S	N/S	None	N/S	N/S	N/S
Day 34	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S	None	N/S	N/S	N/S
Day 35	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S	None	N/S	N/S	N/S
Day 36	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S	None	N/S	N/S	N/S
Day 37	N/S	N/S	None	N/S	N/S	N/S	N/S	N/S	N/A	N/S	N/S	N/S
Day 38	N/S	N/S	Light	N/S	N/S	N/S	N/S	N/S	N/A	N/S	N/S	N/S
Day 39	N/S	N/S	Light	N/S	N/S	N/S	N/S	N/S	N/A	N/S	N/S	N/S
Day 40	N/S	N/S	Light	N/S	N/S	N/S	N/S	N/S	N/A	N/S	N/S	N/S
Total None	**1**	**0**	**9**	**3**	**3**	**2**	**2**	**2**	**3**	**5**	**2**	**5**
Total Light	**5**	**0**	**7**	**7**	**6**	**3**	**1**	**2**	**3**	**8**	**1**	**3**
Total Medium	**5**	**2**	**5**	**4**	**6**	**3**	**1**	**5**	**2**	**3**	**2**	**0**
Total Heavy	**9**	**25**	**18**	**15**	**8**	**10**	**10**	**5**	**8**	**7**	**5**	**7**

Table S11. NOAA hazard mapping smoke impact after wildfires. N/A = not available N/S = not sampling.

Day	Carson, WA (n=23)	Sunriver, OR (n=22)	Corvallis, OR 2 (n=22)	Seattle, WA 2 (n=22)	Richland, WA (n=22)	Seattle, WA 1 (n=22)	Cobb, CA (n=22)	McCall, ID (n=22)	Sandpoint, ID (n=24)	Lake Oswego, OR (n=22)	Prineville, OR (n=18)	Corvallis, OR 1 (n=29)
Day 1	None	None	None	None	Medium	None	Light	Light	None	None	Light	None
Day 2	None	None	None	None	None	None	Light	Light	Light	None	Light	None
Day 3	Heavy	None	None	None	None	None	Medium	Light	None	None	Medium	None
Day 4	Medium	None	None	None	Light	None	Heavy	Medium	None	None	Light	None
Day 5	None	None	None	None	None	None	None	Light	Light	None	None	None
Day 6	None	None	None	None	None	None	None	None	None	None	None	None
Day 7	None	None	None	None	Light	None	None	None	Light	Light	None	None
Day 8	None	None	None	None	None	None	None	Light	None	None	None	None
Day 9	None	None	None	None	Light	None	None	None	None	None	Light	None
Day 10	None	None	None	None	None	None	None	None	None	None	None	None
Day 11	None	None	None	None	None	None	None	Light	None	None	None	None
Day 12	None	None	None	None	None	None	None	None	None	None	None	None
Day 13	None	None	None	None	None	None	Light	Light	None	None	None	None
Day 14	None	None	None	None	None	None	None	None	None	None	None	None
Day 15	None	None	None	None	None	None	None	None	None	None	None	None
Day 16	None	None	None	None	None	None	None	None	None	None	None	None
Day 17	None	None	None	None	None	None	None	None	None	None	None	None
Day 18	None	None	None	None	None	None	None	None	None	None	None	None
Day 19	None	None	None	None	None	None	None	None	None	None	N/S	None
Day 20	None	None	None	None	Light	None	None	None	None	None	N/S	Light
Day 21	None	None	None	None	None	None	None	None	None	None	N/S	None
Day 22	None	Light	None	None	Light	None	None	None	None	None	N/S	None
Day 23	None	N/S	N/S	N/S	N/S	N/S	N/S	N/S	None	N/S	N/S	None
Day 24	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	None	N/S	N/S	None
Day 25	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	None
Day 26	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	Light
Day 27	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	Light
Day 28	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	Light
Day 29	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	None
Total None	**21**	**21**	**22**	**22**	**16**	**22**	**18**	**14**	**21**	**21**	**13**	**25**
Total Light	**0**	**1**	**0**	**0**	**5**	**0**	**2**	**7**	**3**	**1**	**4**	**4**
Total Medium	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**0**	**1**	**0**
Total Heavy	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**

Table S12. Wildfire activity information during sampling. Wildfires were recorded, and corresponding information was collected based on smoke impact to sampling location. Data was collected from the National Wildfire Coordinating Group Incident Information System.

Sampling Location	Wildfire Name(s)	Location	Coordinates	Overall Size (acres)	Total Acres	Distance from Wildfire (miles)
Carson, WA	Mosier Creek	Wasco County	45.655 latitude, -121.376 longitude	985	985	22
St Helena, CA	LNU Lightning Complex (Hennessey, Gamble, 15-10, Spanish, Markley, 13-4, 11-16)	Napa County	38.495 latitude, -122.35043 longitude	363,220	764,773	7
	Woodward	Point Reyes National Seashore	38.018 latitude, -122.839 longitude	4,929		40
	SCU Lightning	Santa Clara County to Merced County	37.882 latitude, -121.777 longitude	396,624		57
Prineville, OR	Laurel Fire	Washington County	44.755 latitude, -119.802 longitude	1,257	585,659	70
	Frog Fire	Deschutes County	44.467 latitude, -121.605 longitude	4,020		50
	Green Ridge	Crook County	44.039 latitude, -120.528 longitude	4,338		14
	Lionshead	Warm Springs Reservation	44.723 latitude, -121.679 longitude	204,469		65
	P-515	Warm Springs Reservation	44.773 latitude, -121.618 longitude	4,609		65
	Beachie Creek	Marion County	44.821 latitude, -122.188 longitude	193,573		87
	Holiday Farm	Willamette National Forest	44.172 latitude, -122.231 longitude	173,393		71
Alturas, CA	W-5 Cold Springs	Lassen County	41.029 latitude, -120.281 longitude	84,817	2,668,442	35
	Crane	Baker County	42.094 latitude, -120.269 longitude	2,993		44
	Sheep	Plumas National Forest	40.279 latitude, -120.761 longitude	29,570		85
	Red Salmon	Six Rivers National Forest	41.185 latitude, -123.433 longitude	144,698		152
	Poodle	Washoe County	40.818 latitude, -119.648 longitude	13,606		66
	Slater/Devil	Klamath National Forest	41.766 latitude, -123.375 longitude	157,229		150
	August Complex North Zone	Mendocino National Forest	40.145 latitude, -122.754 longitude	1,032,648		146
	North Complex	Lassen County	40.091 latitude, -120.931 longitude	318,935		99
	Claremont	Plumas County	39.858 latitude, -120.912 longitude	21,946		114
	Bear	Merced County	39.811 latitude, -121.086 longitude	8,302		119
	August Complex	Colusa County	39.659 latitude, -122.809 longitude	755,603		173
	South Obenchain	Jackson County	42.467 latitude, -122.683 longitude	32,671		129
	Two Four Two	Klamath County	42.653 latitude, -121.869 longitude	14,473		105
	Brattain	Lake County	42.572 latitude, -120.558 longitude	50,951		75
Richland, WA	Evans Canyon	Yakima County	46.854 latitude, -120.799 longitude	75,817	1,171,838	84
	Jungle Creek	Okanogan-Wenatchee National Forest	47.036 latitude, -121.144 longitude	588		105
	Pearl Hill		48.056 latitude, -119.484 longitude	223,730		128
	Cold Springs	Douglas County	48.635 latitude, -119.818 longitude	189,923		169
	Lionshead	Okanogan Highlands	44.723 latitude, -121.679 longitude	204,469		158
	Beachie Creek	Warm Springs Reservation	44.821 latitude, -122.188 longitude	193,573		170
	Riverside	Marion County	45.049 latitude, -122.062 longitude	138,054		156
	Whitney	Mt. Hood National Forest	47.707 latitude, -118.26 longitude	127,430		114
	Babb-Malden/Manning	Lincoln County	47.282 latitude, -117.428 longitude	18,254		115
		Whitman County				
Sunriver, OR	Lionshead	Warm Springs Reservation	44.723 latitude, -121.679 longitude	204,469	835,701	58
	Beachie Creek	Marion County	44.821 latitude, -122.188 longitude	193,573		74
	W-5 Cold Springs	Lassen County	41.029 latitude, -120.281 longitude	84,817		206
	Crane	Baker County	42.094 latitude, -120.269 longitude	2,993		138
	Sheep	Plumas National Forest	40.279 latitude, -120.761 longitude	29,570		252
	Red Salmon	Six Rivers National Forest	41.185 latitude, -123.433 longitude	144,698		210
	Holiday Farm	Willamette National Forest	44.172 latitude, -122.231 longitude	173,393		45
	Fox	Siskiyou County	41.212 latitude, -122.847 longitude	2,188		199
Corvallis, OR	Lionshead	Warm Springs Reservation	44.723 latitude, -121.679 longitude	204,469	571,435	80
	Beachie Creek	Marion County	44.821 latitude, -122.188 longitude	193,573		57
	Holiday Farm	Willamette National Forest	44.172 latitude, -122.231 longitude	173,393		58

Seattle, WA	Lionshead	Warm Springs Reservation	44.723 latitude, -121.679 longitude	204,469	839,458	205
	Beachie Creek	Marion County	44.821 latitude, -122.188 longitude	193,573		196
	Chikamin	Chelan County	47.991 latitude, -120.7 longitude	1,685		80
	Pearl Hill	Douglas County	48.056 latitude, -119.484 longitude	223,730		137
	Cold Springs	Okanogan Highlands	48.635 latitude, -119.818 longitude	189,923		138
	Palmer	Okanogan Highlands	48.837 latitude, -119.575 longitude	17,988		152
	Apples Acres	Chelan County	47.863 latitude, -119.95 longitude	5,500		115
	Downey Creek	Mt. Baker-Snoqualmie	48.264 latitude, -121.21 longitude	2,570		68
	Mt. Lena	National Forest	47.615 latitude, -123.139 longitude	20		36
		Olympic National Forest				
Lake Oswego, OR	Lionshead	Warm Springs Reservation	44.723 latitude, -121.679 longitude	204,469	553,538	70
	Beachie Creek	Marion County	44.821 latitude, -122.188 longitude	193,573		48
	Riverside	Mt Hood National Forest	45.181 latitude, -121.576 longitude	138,054		56
	White River	Mt Hood National Forest	45.049 latitude, -122.062 longitude	17,442		40
McCall, ID	Buck	Valley County	44.786 latitude, -115.476 longitude	19,477	156,104	276
	Porphyry	Valley County	45.248 latitude, -115.438 longitude	14,486		40
	Woodhead	Washington County	44.756 latitude, -116.877 longitude	96,614		39
	Bear Creek	Lemhi County	44.858 latitude, -113.437 longitude	11,900		132
	Shissler	Idaho County	45.76 latitude, -115.193 longitude	11,000		72
	Trap	Custer County	44.312 latitude, -115.1 longitude	2,627		66
Newport, OR	Lionshead	Warm Springs Reservation	44.723 latitude, -121.679 longitude	204,469	571,435	118
	Beachie Creek	Marion County	44.821 latitude, -122.188 longitude	193,573		95
	Holiday Farm	Willamette National Forest	44.172 latitude, -122.231 longitude	173,393		95
Sandpoint, ID	Callahan	Latah County	48.397 latitude, -116.089 longitude	1,276	166,479	22
	Inchelium Complex	Ferry County	48.331 latitude, -118.198 longitude	19,399		76
	Whitney	Lincoln County	47.707 latitude, -118.26 longitude	127,430		90
	Babb-Malden/Manning	Whitman County	47.282 latitude, -117.428 longitude	18,254		84
	West Branch	Coleville National Forest	48.474 latitude, -117.044 longitude	120		24

Table S13. Participant survey responses*.
*NR – no response

Location	Event	Air conditioning	Air conditioning on	Days air conditioning on	Windows Open	Days windows open	Home Age	Candle or incense use	Wood stove	Gas stove	Grilling or charbroiling food	Smoker	Smoking location
Richland, WA	Before wildfire	yes	yes	14	no	0	2010	no	no	yes	NR	no	NR
Seattle, WA 1	Before wildfire	yes	yes	15	yes	5	2015	NR	No response	No response	NR	NR	NR
Alturas, CA	Before wildfire	yes	no	0	no	0	N/A	no	yes "wood stove season has started here"	no	no	yes	outside
Cobb, CA	Before wildfire	yes	yes	2	no	0	NR	NR	NR	NR	NR	NR	NR
St. Helena, CA	Before wildfire	yes	yes	10	yes	8	NR	NR	NR	NR	NR	NR	NR
Sandpoint, ID	Before wildfire	yes	no	0	yes	44	1980	yes	NR	yes	no	no	N/A
Lake Oswego, OR	Before wildfire	yes	yes	NR	no	0	1975	no	no	no	no	no	no
Newport, OR	Before wildfire	no	N/A	N/A	yes	0	NR	NR	NR	NR	NR	NR	NR
Corvallis, OR 1	Before wildfire	no	N/A	N/A	yes	>30	1972	no	yes	yes	no	no	N/A
Richland, WA	Wildfire	yes	yes	21	no	0	2010	no	no	yes	yes	no	N/A
Seattle, WA 2	Wildfire	no	N/A	N/A	yes	5	N/A	yes	no	yes	yes	no	N/A
Carson, WA	Wildfire	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Alturas, CA	Wildfire	yes	yes	5	no	0		no	yes	no	no	yes	outside
St. Helena, CA	Wildfire	yes	yes	7	yes	5	1986	no	no	yes	no	no	N/A
McCall, ID	Wildfire	no	N/A	N/A	yes	6	NR	NR	NR	NR	NR	NR	NR
Sandpoint, ID	Wildfire	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lake Oswego, OR	Wildfire	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Newport, OR	Wildfire	no	N/A	N/A	no	0	NR	NR	NR	NR	NR	NR	NR
Prineville, OR	Wildfire	no	N/A	N/A	yes	5	2006	no	yes	yes	yes	no	N/A
Corvallis, OR 2	Wildfire	yes	yes	2	no	0	1989	no	yes	no	no	no	N/A
Sunriver, OR	Wildfire	no	N/A	N/A	no	0		no	no	no	no	no	N/A
Richland, WA	After wildfire	NR	NR	NR	NR	NR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seattle, WA 1	After wildfire	yes	no	0	yes	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seattle WA 2	After wildfire	no	N/A	N/A	yes	21	1996	yes	no	yes	yes	no	N/A
Carson, WA	After wildfire	yes	yes	22	yes	2	NR	NR	NR	NR	NR	NR	NR
Cobb, CA	After wildfire	yes	yes	4	no	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
McCall, ID	After wildfire	no	N/A	N/A	yes	21	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sandpoint, ID	After wildfire	NR	NR	NR	NR	NR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lake Oswego, OR	After wildfire	yes	no	0	no	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Prineville, OR	After wildfire	NR	NR	NR	NR	NR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Corvallis, OR 1	After wildfire	NR	NR	NR	NR	NR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Corvallis, OR 2	After wildfire	yes	no	0	yes	5	1989	no	yes	yes	no	no	N/A
Sunriver, OR	After wildfire	no	N/A	N/A	no	0	NR	no	no	yes (gas fireplace was in use)	no	no	N/A

*NR – no response

Table S14. PAH air concentrations (ng/m^3) before wildfires. Italicized values indicate 1/2 of the method detection limit (MDL).
a) Before wildfires indoor

Analyte	St Helena, CA	Richland, WA	Seattle, WA 1	Alturas, CA	Cobb, CA	Sandpoint, ID	Lake Oswego, OR	Newport, OR	Corvallis, OR 1
naphthalene	40.2	307	99.1	268	361	398	223	152	244
2-methylnaphthalene	9.56	110	31.9	47.2	72.3	96.4	72.7	48.6	71.5
1-methylnaphthalene	5.64	56.4	19.5	33.3	43.9	56.5	38.4	32.1	38.7
2-ethylnaphthalene	0.728	5.99	2.02	4.19	4.41	8.26	5.46	4.86	3.82
2,6-dimethylnaphthalene	2.9	23.1	8.07	14.3	17.9	25.4	24.3	22.8	12.1
1,4-dimethylnaphthalene	1.12	3.64	0.93	2.77	3.37	3.23	4	2.71	1.63
1,5-dimethylnaphthalene	1.08	4.06	1.51	3.21	*0.0388*	3.66	4.78	3.99	1.82
1,2-dimethylnaphthalene	0.716	6.33	*0.02645*	4.5	*0.03685*	5.89	*0.0439*	*0.03055*	3.24
acenaphthylene	*0.0227*	*0.02155*	3.09	1.22	8.4	*0.03095*	4.72	3.24	0.988
1,8-dimethylnaphthalene	*0.0382*	*0.0362*	*0.0269*	*0.03725*	*0.0364*	*0.02485*	*0.0399*	*0.02815*	*0.0315*
acenaphthene	4.64	27.3	9.79	13.2	23.9	83.3	*0.0575*	20	24.4
2,6-diethylnaphthalene	*0.00385*	*0.00361*	*0.00393*	1.45	*0.00960*	1.10	*0.0181*	*0.0118*	0.421
fluorene	1.73	7.19	2.49	5.21	7.49	21.3	4.04	5.53	4.86
dibenzothiophene	0.117	1.07	0.909	0.973	1.87	1.72	1.48	2.01	0.824
phenanthrene	1.33	6.42	4.52	10.8	10.4	19.6	10.4	48.9	16.2
anthracene	0.0489	0.00204	0.00345	0.285	0.00940	0.724	0.0188	2.37	0.00750
2-methylphenanthrene	0.118	0.971	1.91	2.20	0.993	1.64	3.18	2.46	0.988
1-methylphenanthrene	0.0384	*0.000415*	*0.00224*	*0.00940*	*0.00680*	0.0597	*0.0143*	0.191	*0.00540*
2-methylanthracene	*0.000224*	0.497	1.56	1.28	0.576	0.903	1.71	1.31	0.462
9-methylanthracene	*0.000343*	*0.000345*	*0.00178*	*0.00750*	*0.00540*	*0.00500*	*0.0114*	*0.00735*	*0.00430*
3,6-dimethylphenanthrene	0.00302	0.0432	0.117	0.194	*0.00242*	0.151	0.221	0.113	0.0528
2,3-dimethylanthracene	*0.000061*	0.0166	*0.00063*	0.114	*0.00196*	0.0762	*0.00415*	*0.00269*	*0.001555*
fluoranthene	0.0000960	0.000147	0.00177	0.0465	0.00555	0.00520	0.0118	0.00765	0.0261
9,10-dimethylanthracene	*0.000102*	*0.0001395*	*0.00143*	*0.0062*	*0.00446*	*0.00417*	*0.0095*	*0.00615*	*0.003545*
pyrene	0.000348	0.00302	0.00051	0.0524	0.00159	0.0281	0.00339	0.002195	0.0280
retene	0.0000462	0.0000735	0.000945	0.0974	0.00296	0.0220	0.00630	0.00409	0.0472
benzo[a]fluorene	*0.0001655*	0.00133	*0.00272*	0.0619	*0.0085*	*0.00795*	*0.0181*	*0.0117*	0.0392
benzo[b]fluorene	*0.0000960*	*0.000147*	*0.00177*	0.0465	*0.00555*	*0.0052*	*0.0118*	*0.00765*	0.0261
benzo[c]fluorene	*0.0000361*	*0.0000486*	*0.000491*	0.00766	*0.00153*	*0.00143*	*0.00325*	*0.00211*	0.00714
1-methylpyrene	0.000348	0.00302	*0.000510*	0.0524	*0.00159*	0.0281	*0.00339*	*0.002195*	0.0280
benz[a]anthracene	*0.0000462*	*0.0000735*	*0.000945*	0.0974	*0.00296*	0.0220	*0.0063*	*0.00409*	0.0472
cyclopenta[cd]pyrene	*0.0000217*	*0.0000350*	*0.000454*	0.108	*0.001425*	0.001335	*0.00304*	*0.00197*	0.00113
triphenylene	*0.0000158*	0.000561	*0.000291*	0.0361	*0.000910*	0.0186	*0.00195*	*0.00126*	0.0210

chrysene	*0.0000266*	*0.0000425*	*0.000545*	0.0460	*0.00171*	*0.00160*	*0.00364*	*0.00236*	0.0291
5-methylchrysene	*0.0000805*	*0.000129*	*0.00167*	*0.00730*	*0.00525*	*0.00491*	*0.0112*	*0.00725*	*0.00416*
6-methylchrysene	*0.0000429*	*0.0000690*	*0.000890*	*0.00390*	*0.00279*	*0.00262*	*0.00595*	*0.00386*	*0.00222*
benzo[b]fluoranthene	*0.0000141*	0.0000227	*0.000295*	0.0477	*0.000925*	0.000870	*0.00198*	*0.00128*	0.0242
7,12-dimethylbenz[a]anthracene	0.000152	0.0000765	*0.000975*	0.004275	*0.00306*	0.00287	*0.0065*	*0.004225*	0.00243
benzo[k]fluoranthene	0.0000175	0.0000283	*0.000369*	0.0216	*0.00116*	0.001085	*0.002475*	*0.0016*	0.0112
benzo[j]fluoranthene	0.0000194	0.00003145	*0.0004105*	0.0234	*0.00129*	0.00121	*0.00275*	*0.00178*	0.0123
benzo[e]pyrene	*0.0000188*	*0.0000304*	*0.000397*	0.0219	*0.00125*	*0.00117*	*0.00266*	*0.00173*	0.0109
benzo[a]pyrene	*0.0000372*	*0.0000600*	*0.000785*	*0.00345*	*0.00247*	*0.00232*	*0.00525*	*0.00341*	*0.00196*
perylene	*0.0000416*	*0.0000675*	*0.000880*	*0.00386*	*0.00276*	*0.00259*	*0.00590*	*0.00382*	*0.00219*
indeno[1,2,3-cd]pyrene	*0.00000640*	*0.0000104*	*0.000136*	0.0204	*0.000426*	*0.000400*	*0.000910*	*0.000590*	*0.000339*
dibenzo[a,h]anthracene	*0.0000231*	*0.0000375*	*0.000490*	*0.00215*	*0.00154*	*0.00145*	*0.00329*	*0.00213*	*0.00122*
benzo[a]chrysene	*0.0000166*	*0.0000269*	*0.000352*	*0.00155*	*0.00111*	*0.00104*	*0.00236*	*0.00153*	*0.000880*
benzo[ghi]perylene	*0.00000850*	*0.0000138*	*0.000181*	0.0111	*0.000565*	*0.000530*	*0.00121*	*0.000780*	0.00772
anthanthrene	*0.00000620*	*0.0000101*	*0.000132*	0.0164	*0.000413*	*0.000387*	*0.000880*	*0.000570*	*0.000328*
naphtho[1,2-b]fluoranthene	*0.0000266*	*0.0000432*	*0.000565*	*0.00248*	*0.00178*	*0.00166*	*0.00379*	*0.00245*	*0.00141*
naphtho[2,3-b]fluoranthene	*0.0000266*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
dibenzo[a,e]fluoranthene	*0.00000750*	*0.0000122*	*0.000159*	*0.000695*	*0.000499*	*0.000468*	*0.00107*	*0.000690*	*0.000397*
dibenzo[a,l]pyrene	*0.00000655*	*0.0000107*	*0.000140*	*0.000610*	*0.000438*	*0.000412*	*0.000935*	*0.000605*	*0.000348*
naphtho[2,3-k]fluoranthene	*0.0000266*	*0.0000432*	*0.000565*	*0.00248*	*0.00178*	*0.00166*	*0.00379*	*0.00245*	*0.00141*
naphtho[2,3-e]pyrene	*0.0000266*	*0.0000432*	*0.000565*	*0.00248*	*0.00178*	*0.00166*	*0.00379*	*0.00245*	*0.00141*
dibenzo[a,e]pyrene	*0.0000880*	*0.000143*	*0.00187*	*0.00820*	*0.00585*	*0.00550*	*0.0125*	*0.00810*	*0.00467*
coronene	*0.00000800*	*0.0000130*	*0.000170*	*0.000745*	*0.000535*	*0.000500*	*0.00114*	*0.000740*	*0.000424*
dibenzo[e,l]pyrene	*0.0000266*	*0.0000432*	*0.000565*	*0.00248*	*0.00178*	*0.00166*	*0.00379*	*0.00245*	*0.00141*
naphtho[2,3-a]pyrene	*0.0000266*	*0.0000432*	*0.000565*	*0.00248*	*0.00178*	*0.00166*	*0.00379*	*0.00245*	*0.00141*
benzo[b]perylene	*0.0000266*	*0.0000432*	*0.000565*	*0.00248*	*0.00178*	*0.00166*	*0.00379*	*0.00245*	*0.00141*
dibenzo[a,i]pyrene	*0.00002267*	*0.0000368*	*0.000480*	*0.00211*	*0.00151*	*0.00142*	*0.00322*	*0.00209*	*0.00120*

b) Before wildfires outdoor

Analyte	***St Helena, CA***	***Richland, WA***	***Seattle, WA 1***	***Alturas, CA***	***Cobb, CA***	***Sandpoint, ID***	***Lake Oswego, OR***	***Newport, OR***	***Corvallis, OR 1***
naphthalene	27.7	27.5	124	72.8	55.6	195	52.7	65.7	28.9
2-methylnaphthalene	2.88	3.98	26.3	11.7	4.71	33.4	9.74	8.01	6.54
1-methylnaphthalene	1.71	2.24	14	9.06	2.86	20.5	6.65	5.92	5.42
2-ethylnaphthalene	0.226	0.136	1.26	0.863	0.38	1.77	0.686	0.657	0.489
2,6-dimethylnaphthalene	0.682	0.418	2.91	2.25	0.796	4.36	1.78	1.39	1.48
1,4-dimethylnaphthalene	*0.0444*	1.06	0.402	0.681	0.162	0.694	0.332	0.287	0.313

1,5-dimethylnaphthalene	0.195	0.0764	0.351	0.629	*0.0227*	0.83	0.338	0.307	0.342
1,2-dimethylnaphthalene	0.155	0.169	*0.0357*	0.905	*0.0218*	1.28	*0.0264*	*0.0177*	0.566
acenaphthylene	*0.0240*	*0.0125*	0.229	0.721	*0.0134*	1.22	*0.0161*	0.642	0.206
1,8-dimethylnaphthalene	*0.04045*	*0.0206*	*0.0363*	0.0830	*0.0222*	*0.0124*	*0.0268*	*0.0179*	*0.0192*
acenaphthene	1.84	4.27	3.48	3.45	*0.03305*	19.8	2.27	2.29	5.9
2,6-diethylnaphthalene	*0.00412*	0.0106	*0.00363*	0.118	*0.00199*	*0.000990*	*0.00251*	*0.00192*	0.0323
fluorene	0.766	0.69	1.12	1.59	0.313	5.98	0.82	0.641	2.04
dibenzothiophene	0.0315	0.0149	0.0664	0.0267	0.0133	0.109	0.0305	0.0285	0.029
phenanthrene	0.755	0.474	1.83	3.04	0.321	6.41	0.738	0.921	1.23
anthracene	0.0275	0.0149	*0.00217*	0.366	*0.00118*	0.513	*0.00149*	0.0779	0.095
2-methylphenanthrene	0.0550	0.0340	0.180	0.295	0.0300	0.200	0.0565	0.107	0.267
1-methylphenanthrene	0.0214	0.00170	*0.000770*	0.0460	*0.000354*	0.0124	*0.000483*	*0.000890*	*0.000290*
2-methylanthracene	*0.000261*	0.0191	0.0941	0.291	0.0163	0.129	0.0327	0.0659	0.111
9-methylanthracene	*0.000409*	*0.000257*	*0.000625*	0.00845	*0.000288*	0.00185	*0.000391*	*0.000710*	*0.000236*
3,6-dimethylphenanthrene	0.00193	0.00252	0.00957	0.0160	*0.000102*	0.00516	0.00272	*0.000305*	0.0205
2,3-dimethylanthracene	*0.0000920*	0.00193	*0.000190*	0.0264	*0.0000830*	0.00301	*0.000116*	*0.000247*	*0.0000670*
fluoranthene	0.0276	0.0264	0.121	0.424	0.0169	0.258	0.0350	0.111	0.0486
9,10-dimethylanthracene	*0.000175*	*0.000155*	*0.000407*	*0.000635*	*0.000176*	*0.0000640*	*0.000247*	*0.000555*	*0.000143*
pyrene	0.0127	0.0192	0.114	0.407	0.0140	0.139	0.0261	0.0988	0.0495
retene	0.00368	0.0234	0.0596	0.610	0.0113	0.134	0.0206	0.0649	0.0459
benzo[a]fluorene	*0.000306*	0.00138	0.00476	0.0358	*0.000323*	0.00491	*0.000455*	0.00658	0.00225
benzo[b]fluorene	*0.000187*	*0.000181*	*0.000482*	0.0192	*0.000206*	0.00245	*0.000291*	0.00439	0.00149
benzo[c]fluorene	*0.0000610*	0.000151	*0.000140*	0.0195	*0.0000605*	0.00242	*0.0000850*	*0.000191*	0.000812
1-methylpyrene	0.000630	0.000982	0.00411	0.0244	*0.0000590*	0.00268	*0.0000835*	*0.000197*	0.0023
benz[a]anthracene	*0.0000950*	0.000934	*0.000254*	0.0523	*0.000108*	0.00372	*0.000153*	*0.000365*	0.00219
cyclopenta[cd]pyrene	*0.0000450*	*0.0000455*	*0.000122*	0.0294	*0.0000520*	0.00134	*0.0000730*	*0.000175*	*0.0000420*
triphenylene	0.000935	0.000826	*0.0000795*	0.00882	*0.0000339*	0.00105	*0.000048*	*0.000113*	0.00112
chrysene	*0.0000545*	0.000327	*0.000146*	0.0444	*0.0000620*	0.00373	*0.0000880*	*0.000210*	0.00192
5-methylchrysene	*0.000166*	*0.0001675*	*0.0004475*	0.00267	*0.0001905*	*0.000068*	*0.000269*	*0.000645*	*0.0001545*
6-methylchrysene	*0.0000885*	*0.000089*	*0.0002385*	*0.000397*	*0.0001015*	*0.00003625*	*0.0001435*	*0.0003435*	*0.0000825*
benzo[b]fluoranthene	*0.0000292*	*0.0000296*	*0.0000790*	0.0166	*0.0000337*	0.000763	*0.0000475*	*0.000114*	0.000732
7,12-dimethylbenz[a]anthracene	*0.0000985*	*0.0000980*	*0.000263*	*0.000435*	*0.000112*	*0.000040*	*0.000158*	*0.000377*	*0.0000905*
benzo[k]fluoranthene	*0.0000365*	*0.0000370*	*0.0000990*	0.00789	*0.0000421*	0.000328	*0.0000595*	*0.000143*	0.000313
benzo[j]fluoranthene	*0.0000405*	*0.0000411*	*0.000110*	0.0127	*0.0000468*	0.000436	*0.0000660*	*0.000159*	0.000248
benzo[e]pyrene	*0.0000392*	*0.0000397*	*0.000106*	0.00761	*0.0000453*	0.000323	*0.0000640*	*0.000154*	0.000293
benzo[a]pyrene	*0.0000775*	*0.0000785*	*0.000211*	0.00155	*0.0000895*	*0.0000319*	*0.000127*	*0.000304*	*0.0000725*

perylene	*0.0000865*	*0.0000880*	*0.000235*	*0.000393*	*0.000100*	*0.0000357*	*0.000142*	*0.000340*	*0.0000810*
indeno[1,2,3-cd]pyrene	*0.0000134*	*0.0000136*	*0.0000363*	0.00391	*0.0000155*	0.000210	*0.0000218*	*0.0000525*	*0.0000125*
dibenzo[a,h]anthracene	*0.0000483*	*0.0000490*	*0.000131*	*0.000219*	*0.0000560*	*0.0000199*	*0.0000790*	*0.000189*	*0.0000453*
benzo[a]chrysene	0.0000347	0.0000352	0.0000940	0.000157	*0.0000401*	*0.0000143*	*0.0000565*	*0.000136*	*0.0000325*
benzo[ghi]perylene	*0.0000178*	*0.0000181*	*0.0000483*	0.00356	*0.0000206*	0.000149	*0.0000290*	*0.0000695*	*0.0000167*
anthanthrene	*0.0000130*	*0.0000132*	*0.0000351*	0.00211	*0.0000150*	0.00000535	*0.0000211*	*0.0000505*	*0.0000121*
naphtho[1,2-b]fluoranthene	*0.0000555*	*0.0000565*	*0.000151*	*0.000252*	*0.0000645*	*0.0000229*	*0.0000910*	*0.000218*	*0.0000520*
naphtho[2,3-b]fluoranthene	*0.0000555*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
dibenzo[a,e]fluoranthene	*0.0000157*	*0.0000159*	*0.0000425*	*0.0000710*	*0.0000181*	*0.00000645*	*0.0000256*	*0.0000615*	*0.0000147*
dibenzo[a,l]pyrene	*0.0000138*	*0.0000140*	*0.0000373*	*0.0000620*	*0.0000159*	*0.00000565*	*0.0000224*	*0.0000540*	*0.0000129*
naphtho[2,3-k]fluoranthene	*0.0000555*	*0.0000565*	*0.000151*	*0.000252*	*0.0000645*	*0.0000229*	*0.0000910*	*0.000218*	*0.0000520*
naphtho[2,3-e]pyrene	*0.0000555*	*0.0000565*	*0.000151*	*0.000252*	*0.0000645*	*0.0000229*	*0.0000910*	*0.000218*	*0.0000520*
dibenzo[a,e]pyrene	*0.000184*	*0.000187*	*0.000500*	*0.000835*	*0.000213*	*0.0000760*	*0.000301*	*0.0007200*	*0.000173*
coronene	*0.0000168*	*0.0000170*	*0.0000455*	*0.0000760*	*0.0000194*	*0.0000069*	*0.0000274*	*0.0000655*	*0.0000157*
dibenzo[e,l]pyrene	*0.0000555*	*0.0000565*	*0.000151*	*0.000252*	*0.0000645*	*0.0000229*	*0.0000910*	*0.000218*	*0.0000520*
naphtho[2,3-a]pyrene	*0.0000555*	*0.0000565*	*0.000151*	*0.000252*	*0.0000645*	*0.0000229*	*0.0000910*	*0.000218*	*0.0000520*
benzo[b]perylene	*0.0000555*	*0.0000565*	*0.000151*	*0.000252*	*0.0000645*	*0.0000229*	*0.0000910*	*0.000218*	*0.0000520*
dibenzo[a,i]pyrene	*0.0000473*	*0.0000480*	*0.000129*	*0.000215*	*0.0000545*	*0.0000195*	*0.0000770*	*0.000186*	*0.000044*
dibenzo[a,h]pyrene	*0.0000174*	*0.0000176*	*0.0000471*	*0.0000785*	*0.0000200*	*0.00000715*	*0.0000283*	*0.0000680*	*0.0000163*

Table S15. PAH air concentrations (ng/m^3) during wildfires. Italicized values indicate 1/2 MDL.

a) During wildfires indoor

Analyte	*Carson, WA*	*St Helena, CA*	*Prineville, OR*	*Alturas, CA*	*Richland, WA*	*Sunriver, OR*	*Corvallis, OR 2*	*Seattle, WA 2*	*Lake Oswego, OR*	*McCall, ID*	*Newport, OR*	*Sandpoint, ID*
naphthalene	613	109	71.1	256	532	146	345	267	357	436	137	2860
2-methylnaphthalene	269	32.8	12.9	37.6	215	41.5	35.1	41.6	184	164	35.0	282
1-methylnaphthalene	138	19.4	5.82	23.1	111	25.0	21.9	22.3	102	129	25.7	146
2-ethylnaphthalene	13.7	2.74	0.823	3.74	10.8	4.81	5.63	*0.0307*	13.8	18.7	3.96	23.1
2,6-dimethylnaphthalene	47.3	9.57	1.98	13.6	34.0	19.9	16.7	13.2	47.9	64.3	14.3	47.2
1,4-dimethylnaphthalene	6.07	2.25	0.391	2.03	3.86	3.68	3.90	2.60	5.70	7.03	1.93	5.18
1,5-dimethylnaphthalene	13.0	3.78	0.695	3.33	6.74	6.30	3.90	3.34	8.37	13.5	3.17	7.65
1,2-dimethylnaphthalene	5.96	3.48	0.911	2.54	4.51	6.02	7.41	3.15	6.15	8.04	2.13	5.24
acenaphthylene	*0.0293*	*0.0394*	*0.0267*	0.214	*0.0272*	*0.0296*	1.62	0.240	0.506	1.77	0.788	*0.0620*
1,8-dimethylnaphthalene	*0.0305*	*0.0451*	*0.0303*	*0.0447*	*0.0379*	*0.0319*	*0.0434*	*0.0294*	*0.0498*	*0.0660*	*0.0329*	*0.0354*
acenaphthene	11.6	12.3	*0.0449*	11.6	16.4	*0.0472*	8.64	19.7	25.9	9.44	8.38	365
2,6-diethylnaphthalene	*0.00740*	*0.00995*	*0.00655*	*0.00985*	*0.00615*	*0.00740*	*0.0178*	*0.00910*	*0.0267*	*0.0402*	*0.0164*	*0.0181*
fluorene	6.13	2.78	1.44	4.94	7.91	7.08	5.72	6.21	6.64	11.6	2.45	58.3
dibenzothiophene	0.893	1.45	0.236	1.02	4.50	5.14	1.62	1.19	1.26	12.8	0.651	2.16
phenanthrene	6.25	6.31	2.50	14.3	20.0	22.9	8.12	8.76	12.0	39.4	7.15	30.7
anthracene	0.212	*0.00935*	0.0507	*0.00925*	*0.00545*	*0.00715*	*0.0182*	*0.00915*	*0.0280*	0.948	0.334	0.868
2-methylphenanthrene	0.922	1.46	0.474	3.19	6.94	9.17	1.36	0.932	3.72	18.8	0.806	1.53
1-methylphenanthrene	0.498	0.772	0.337	1.59	4.64	6.64	0.832	0.478	1.76	16.5	0.46	0.708
2-methylanthracene	*0.00243*	*0.00309*	*0.00207*	*0.00306*	*0.00170*	*0.00240*	*0.00645*	*0.00317*	0.332	*0.0154*	*0.00615*	*0.0068*
9-methylanthracene	*0.00412*	*0.00525*	*0.00351*	*0.00520*	*0.00288*	*0.00406*	*0.0110*	*0.00535*	*0.0171*	*0.0262*	*0.0105*	*0.01155*
3,6-dimethylphenanthrene	0.0582	0.0785	*0.00157*	0.167	0.374	0.320	0.0766	0.0538	0.251	1.2	0.0411	0.0779
2,3-dimethylanthracene	*0.00149*	*0.00189*	*0.00127*	*0.00187*	*0.00102*	*0.00147*	*0.00400*	*0.00196*	*0.00630*	*0.00960*	*0.00383*	*0.004235*
fluoranthene	0.234	0.273	0.143	1.06	0.424	0.234	0.312	0.574	0.407	1.1	0.445	0.683
9,10-dimethylanthracene	*0.00339*	*0.00428*	*0.00288*	*0.00423*	*0.00232*	*0.00334*	*0.00910*	*0.00446*	*0.0144*	*0.0220*	*0.00875*	*0.0097*
pyrene	0.221	0.234	0.218	0.524	0.496	0.353	0.438	0.308	0.751	1.03	0.304	0.35
retene	0.116	0.253	0.948	0.442	0.638	0.869	1.11	0.305	2.36	1.04	0.443	0.304
benzo[a]fluorene	*0.00645*	*0.00815*	*0.00545*	*0.00805*	0.0186	*0.00635*	*0.0174*	*0.00850*	*0.0274*	*0.0420*	*0.0167*	*0.0185*
benzo[b]fluorene	*0.00421*	*0.00530*	*0.00357*	*0.00525*	*0.00286*	*0.00414*	*0.0114*	*0.00555*	*0.0179*	*0.0274*	*0.0109*	*0.0121*
benzo[c]fluorene	*0.00116*	*0.00147*	*0.000985*	*0.00145*	*0.000795*	*0.00115*	*0.00313*	*0.00153*	*0.00492*	*0.00755*	*0.00300*	*0.00332*
1-methylpyrene	0.0184	0.0188	0.0115	0.0242	0.0388	0.0143	0.0364	*0.00159*	0.0616	0.0974	*0.00313*	*0.00346*
benz[a]anthracene	*0.00225*	*0.00284*	0.0145	*0.00280*	0.0146	0.0161	0.0566	0.0183	0.0744	*0.0147*	*0.00585*	*0.00645*
cyclopenta[cd]pyrene	*0.00108*	*0.00137*	*0.000920*	*0.00135*	*0.000735*	*0.00107*	*0.00293*	*0.001425*	*0.00460*	*0.00705*	*0.00281*	*0.00311*

triphenylene	0.0145	0.000875	0.0141	0.0223	0.0120	0.0166	*0.00187*	0.0162	0.0525	*0.00452*	*0.00180*	*0.00199*
chrysene	*0.00130*	0.0133	0.00818	*0.00162*	0.00786	0.0077	*0.00350*	*0.00171*	*0.00550*	*0.00845*	*0.00336*	*0.00372*
5-methylchrysene	*0.00398*	*0.00500*	*0.00338*	*0.00496*	*0.00270*	*0.00392*	*0.0108*	*0.00525*	*0.0169*	*0.0260*	*0.0103*	*0.0114*
6-methylchrysene	*0.00212*	*0.00268*	*0.00180*	*0.00265*	*0.00144*	*0.00209*	*0.00570*	*0.002795*	*0.00900*	*0.0139*	*0.00550*	*0.00610*
benzo[b]fluoranthene	*0.000705*	*0.000885*	*0.000595*	*0.000875*	0.00956	*0.000690*	0.0348	*0.00093*	*0.00299*	*0.00460*	*0.00183*	*0.00202*
7,12-dimethylbenz[a]anthracene	*0.00233*	*0.00293*	*0.00197*	*0.00290*	*0.00158*	*0.00229*	*0.00630*	*0.003065*	*0.00990*	*0.0152*	*0.00600*	*0.00665*
benzo[k]fluoranthene	*0.000880*	*0.00111*	*0.000745*	*0.00110*	*0.000600*	*0.000865*	*0.00238*	*0.00116*	*0.00375*	*0.00575*	*0.00229*	*0.00253*
benzo[j]fluoranthene	*0.000980*	*0.00124*	*0.000830*	*0.00122*	0.00148	*0.000965*	0.00694	*0.00129*	0.0106	*0.00640*	*0.00254*	*0.00281*
benzo[e]pyrene	*0.000945*	*0.00120*	0.00299	*0.00118*	0.00305	0.00303	0.0171	*0.00125*	*0.00403*	*0.00620*	*0.00246*	*0.00272*
benzo[a]pyrene	*0.00188*	*0.00237*	*0.00159*	*0.00234*	*0.00127*	*0.00185*	0.0219	*0.00247*	0.0176	*0.0123*	*0.00486*	*0.00540*
perylene	*0.00210*	*0.00265*	*0.00178*	*0.00262*	*0.00142*	*0.00207*	*0.00565*	*0.00277*	*0.00890*	*0.0137*	*0.00545*	*0.00600*
indeno[1,2,3-cd]pyrene	*0.000324*	*0.000408*	*0.000275*	*0.000403*	*0.000220*	*0.000319*	*0.0266*	*0.000427*	*0.00138*	*0.00211*	*0.000840*	*0.000930*
dibenzo[a,h]anthracene	*0.00117*	*0.00148*	*0.000990*	*0.00146*	*0.000795*	*0.00115*	*0.00316*	*0.00154*	*0.00497*	*0.00765*	*0.00303*	*0.00336*
benzo[a]chrysene	*0.000840*	*0.00106*	*0.000710*	*0.00105*	*0.000570*	*0.000825*	*0.00227*	*0.00111*	*0.00357*	*0.00550*	*0.00218*	*0.00241*
benzo[ghi]perylene	*0.000431*	*0.000540*	0.000365	0.000535	0.00214	0.000424	0.0145	0.00508	0.0107	*0.00281*	*0.00112*	*0.00124*
anthanthrene	*0.000313*	*0.000395*	*0.000266*	*0.000391*	*0.000213*	*0.000309*	*0.000845*	*0.000413*	*0.00133*	*0.00205*	*0.000810*	*0.000900*
naphtho[1,2-b]fluoranthene	*0.00135*	*0.00170*	*0.00114*	*0.00168*	*0.000915*	*0.00133*	*0.00364*	*0.00178*	*0.00570*	*0.00880*	*0.00350*	*0.00387*
naphtho[2,3-b]fluoranthene	*0.00135*	*0.00170*	*0.00114*	*0.00168*	*0.000915*	*0.00133*	*0.00364*	*0.00178*	*0.00570*	*0.00880*	*0.00350*	*0.00387*
dibenzo[a,e]fluoranthene	0.000379	0.000478	0.000322	0.000472	0.000257	0.000373	0.00103	0.000500	0.00161	0.00248	0.000985	0.00109
dibenzo[a,l]pyrene	0.000333	0.000419	0.000282	0.000414	0.000226	0.000327	0.000900	0.000438	0.00142	0.00217	0.000860	0.000955
naphtho[2,3-k]fluoranthene	0.00135	0.00170	0.00114	0.00168	0.000915	0.00133	0.00364	0.00178	0.00570	0.00880	0.00350	0.00387
naphtho[2,3-e]pyrene	0.00135	0.00170	0.00114	0.00168	0.000915	0.00133	0.00364	0.00178	0.00570	0.00880	0.00350	0.003865
dibenzo[a,e]pyrene	0.00446	0.00560	0.00378	0.00555	0.00303	0.00439	0.0121	0.00590	0.0190	0.0291	0.01155	0.0128
coronene	0.000406	0.000510	0.000344	0.000505	0.000275	0.000400	0.00110	0.000535	0.00173	0.00265	0.00105	0.00117
dibenzo[e,l]pyrene	0.00135	0.00170	0.00114	0.00168	0.000915	0.00133	0.00364	0.00178	0.00570	0.00880	0.00350	0.00387
naphtho[2,3-a]pyrene	0.00135	0.00170	0.00114	0.00168	0.000915	0.00133	0.00364	0.00178	0.00570	0.00880	0.00350	0.00387
benzo[b]perylene	0.00135	0.00170	0.00114	0.00168	0.000915	0.00133	0.00364	0.00178	0.00570	0.00880	0.00350	0.00387
dibenzo[a,i]pyrene	0.000420	0.000530	0.000356	0.000520	0.000285	0.000413	0.00114	0.000550	0.00179	0.00274	0.00109	0.00121
dibenzo[a,h]pyrene	0.00115	0.00145	0.000970	0.00143	0.000775	0.00113	0.00310	0.00151	0.00487	0.00750	0.00297	0.00329

b) During wildfires outdoor

Analyte	*Carson, WA*	*St Helena, CA*	*Prineville, OR*	*Alturas, CA*	*Richland, WA*	*Sunriver, OR*	*Corvallis, OR 2*	*Seattle, WA 2*	*Lake Oswego, OR*	*McCall, ID*	*Newport, OR*	*Sandpoint, ID*
naphthalene	24.2	22.9	37.5	63.0	80.9	26.2	257	175	15.4	53.1	47.2	42.7
2-methylnaphthalene	5.04	2.32	3.53	11.4	12.4	6.32	20.4	44.6	1.53	7.44	3.97	4.78
1-methylnaphthalene	4.23	1.93	3.25	5.27	7.15	4.69	13.2	25.6	1.68	3.97	1.65	2.63
2-ethylnaphthalene	0.595	0.247	0.529	0.518	0.749	0.600	1.76	3.78	0.274	0.477	0.211	0.397

2,6-dimethylnaphthalene	2.17	0.955	1.17	1.36	2.32	2.68	5.5	11.5	0.642	1.02	0.392	0.906
1,4-dimethylnaphthalene	0.587	0.154	0.186	0.185	0.598	0.757	0.844	1.58	0.209	0.139	*0.0440*	0.0979
1,5-dimethylnaphthalene	1.49	0.332	*0.0446*	0.390	0.486	1.69	1.19	2.38	0.465	0.263	0.128	0.268
1,2-dimethylnaphthalene	1.19	0.4	0.355	0.316	0.492	1.60	1.12	2.16	0.512	0.205	0.102	0.359
acenaphthylene	0.146	0.0649	0.0615	*0.0217*	0.0929	0.108	*0.0127*	0.556	0.0284	0.0513	*0.0238*	0.0699
1,8-dimethylnaphthalene	*0.0246*	*0.0195*	*0.0436*	*0.0365*	*0.0316*	*0.0243*	*0.01735*	*0.0500*	*0.0176*	*0.0382*	*0.0401*	*0.0382*
acenaphthene	5.79	2.50	3.70	3.34	4.64	7.32	127	68.1	1.64	5.87	0.0590	2.11
2,6-diethylnaphthalene	*0.00580*	*0.00400*	*0.00455*	*0.0037*	*0.00306*	*0.00384*	*0.00270*	*0.0110*	*0.00150*	*0.00385*	*0.00407*	*0.00565*
fluorene	8.90	1.16	2.65	4.00	2.39	7.49	41.4	17.6	2.50	2.18	0.315	1.53
dibenzothiophene	0.225	0.0615	0.0522	0.0858	0.0664	0.882	3.00	1.50	0.0111	0.0837	0.0102	0.0534
phenanthrene	33.4	3.10	2.31	13.1	3.60	15.0	67.1	33.3	1.77	2.27	4.04	3.13
anthracene	2.68	0.162	*0.00276*	0.383	0.136	0.534	1.77	1.16	*0.000880*	0.0677	0.0731	0.198
2-methylphenanthrene	6.02	0.466	0.292	1.84	0.273	2.51	1.63	2.40	0.125	0.173	0.915	0.475
1-methylphenanthrene	9.53	0.578	0.274	2.64	0.169	4.10	0.660	1.22	0.147	0.0671	0.987	0.646
2-methylanthracene	0.594	*0.00127*	*0.000525*	*0.000478*	*0.000207*	*0.00109*	0.0570	*0.00340*	*0.000115*	*0.000297*	*0.000244*	*0.00146*
9-methylanthracene	0.108	*0.00215*	*0.000865*	*0.000790*	*0.000328*	*0.00184*	*0.00133*	*0.00575*	*0.000185*	*0.000478*	*0.000377*	*0.00246*
3,6-dimethylphenanthrene	0.180	0.0206	0.00995	0.0324	0.00721	0.0828	0.0380	0.134	*0.000615*	0.00828	*0.0000930*	*0.00108*
2,3-dimethylanthracene	*0.00117*	*0.000775*	*0.000269*	*0.000253*	*0.0000805*	*0.000655*	*0.000475*	*0.00207*	*0.0000499*	*0.000129*	*0.0000755*	*0.000870*
fluoranthene	3.56	0.320	0.213	0.795	0.165	1.10	2.89	4.36	0.0312	0.250	0.138	0.280
9,10-dimethylanthracene	*0.00265*	*0.00177*	*0.000580*	*0.000550*	*0.000161*	*0.00149*	*0.00108*	*0.00470*	*0.000104*	*0.000264*	*0.000136*	*0.00197*
pyrene	7.55	0.419	0.175	1.57	0.113	3.94	1.25	2.20	0.0552	0.0978	0.335	0.406
retene	44.0	2.03	0.571	9.76	0.171	28.1	0.355	1.10	0.346	0.0198	1.82	2.14
benzo[a]fluorene	0.344	0.0193	0.00808	0.0432	0.00303	0.0784	0.0205	0.0502	0.00107	0.00301	0.00485	*0.00373*
benzo[b]fluorene	0.138	0.0138	0.00475	0.0154	0.00180	0.0310	0.0131	0.0366	*0.000120*	*0.000302*	0.00199	*0.00242*
benzo[c]fluorene	0.165	*0.000605*	0.00167	0.0160	0.000934	0.0363	0.00616	0.00863	0.000171	*0.0000915*	0.00194	*0.000675*
1-methylpyrene	0.218	0.0118	0.00591	0.0215	0.00216	0.0556	0.0120	0.0481	0.000730	0.00222	0.00203	0.0121
benz[a]anthracene	0.395	0.00997	0.00454	0.0214	0.00249	0.115	0.0123	0.0499	0.001720	0.00167	0.00199	0.0162
cyclopenta[cd]pyrene	0.137	*0.000565*	*0.000175*	*0.000168*	*0.0000436*	0.0371	0.0712	0.184	*0.0000300*	*0.000075*	*0.0000323*	*0.00062*
triphenylene	0.116	0.00840	0.00729	0.0198	0.00191	0.0426	0.00806	0.0337	0.00188	0.00188	0.00244	0.0111
chrysene	0.567	*0.000675*	0.00982	0.0582	0.00409	0.217	0.0134	0.0561	0.00638	0.00152	0.00704	0.0129
5-methylchrysene	0.0380	*0.00208*	*0.000645*	0.00141	*0.000161*	0.0165	*0.00126*	*0.0055*	*0.000111*	*0.000276*	*0.000120*	*0.002285*
6-methylchrysene	0.0354	*0.00111*	*0.000344*	0.00441	*0.0000860*	0.0157	*0.000670*	*0.00293*	0.000671	*0.000147*	*0.0000635*	*0.00122*
benzo[b]fluoranthene	0.179	*0.000367*	0.00251	0.0100	0.000892	0.0751	0.00560	0.0328	0.00198	*0.0000486*	0.00127	*0.000404*
7,12-dimethylbenz[a]anthracene	0.0455	*0.00121*	*0.000378*	0.00157	*0.0000950*	0.0166	*0.000735*	*0.00321*	0.000245	*0.000162*	*0.0000710*	*0.00134*
benzo[k]fluoranthene	0.066	*0.000459*	*0.000142*	0.00319	0.000326	0.0274	0.00208	0.0107	0.000553	*0.0000606*	0.000469	*0.000505*
benzo[j]fluoranthene	0.122	*0.000510*	0.000622	0.00520	0.000306	0.0522	0.00154	0.0142	0.00113	*0.0000675*	0.000638	*0.000560*

benzo[e]pyrene	0.108	*0.000494*	0.00101	0.00482	0.000433	0.0445	0.00282	0.0185	0.000819	*0.0000650*	0.000460	*0.000545*
benzo[a]pyrene	0.145	*0.000975*	*0.000303*	0.00292	0.000309	0.0501	0.00285	0.0267	0.000474	*0.000129*	*0.0000555*	*0.00108*
perylene	0.0342	*0.00109*	*0.000339*	*0.000326*	*0.0000840*	*0.000920*	*0.000665*	*0.00290*	*0.0000580*	*0.000145*	*0.0000620*	*0.00121*
indeno[1,2,3-cd]pyrene	0.0315	*0.000169*	*0.000052*	*0.0000500*	*0.0000130*	0.0221	0.00315	0.0191	0.000554	*0.0000223*	0.000365	*0.000186*
dibenzo[a,h]anthracene	*0.000915*	*0.000610*	*0.000189*	*0.000182*	*0.0000470*	*0.000510*	*0.000370*	*0.00162*	*0.0000323*	*0.0000805*	*0.0000346*	*0.000670*
benzo[a]chrysene	0.0476	*0.000438*	*0.000136*	*0.000130*	*0.0000337*	0.0258	*0.000266*	*0.00116*	*0.0000232*	*0.0000580*	*0.0000248*	*0.000482*
benzo[ghi]perylene	0.0522	0.00141	0.000712	0.00166	0.000302	0.0208	0.00512	0.0218	0.000317	*0.0000297*	0.000193	*0.000247*
anthanthrene	0.0121	*0.000163*	*0.0000505*	*0.0000486*	*0.0000126*	0.00502	0.00312	0.0161	*0.00000865*	*0.0000216*	*0.00000925*	*0.000180*
naphtho[1,2-b]fluoranthene	0.0129	*0.000700*	*0.000218*	*0.000209*	*0.0000540*	0.00573	*0.000427*	*0.00186*	*0.0000373*	*0.0000930*	*0.0000398*	*0.000775*
naphtho[2,3-b]fluoranthene	*0.00106*	*0.000700*	*0.000218*	*0.000209*	*0.0000540*	*0.000590*	*0.000427*	*0.00186*	*0.0000373*	*0.0000930*	*0.0000398*	*0.000775*
dibenzo[a,e]fluoranthene	0.038	*0.000198*	*0.0000610*	*0.0000590*	*0.0000152*	*0.000166*	*0.000120*	*0.000525*	*0.0000151*	*0.0000261*	*0.0000112*	*0.000218*
dibenzo[a,l]pyrene	*0.000260*	*0.000173*	*0.0000535*	*0.0000515*	*0.0000134*	*0.000146*	*0.000105*	*0.000460*	*0.00000920*	*0.0000229*	*0.00000980*	*0.000191*
naphtho[2,3-k]fluoranthene	0.0131	*0.000700*	*0.000218*	*0.000209*	*0.0000540*	0.00671	*0.000427*	*0.00186*	*0.0000373*	*0.0000930*	*0.0000398*	*0.000775*
naphtho[2,3-e]pyrene	*0.00106*	*0.000700*	*0.000218*	*0.000209*	*0.0000540*	*0.000590*	*0.000427*	*0.00186*	*0.0000373*	*0.0000930*	*0.0000398*	*0.000775*
dibenzo[a,e]pyrene	0.00899	*0.00233*	*0.000720*	*0.000690*	*0.000179*	0.00429	*0.00141*	*0.00615*	*0.000123*	*0.000307*	*0.000132*	*0.00256*
coronene	0.00657	*0.000212*	*0.0000655*	*0.0000630*	0.0000905	0.00248	0.00125	0.0043	0.000062	*0.0000280*	*0.000012*	*0.000233*
dibenzo[e,l]pyrene	0.0460	*0.000700*	*0.000218*	*0.000209*	*0.0000540*	0.0215	*0.000427*	*0.00186*	*0.0000373*	*0.0000930*	*0.0000398*	*0.000775*
naphtho[2,3-a]pyrene	*0.00106*	*0.000700*	*0.000218*	*0.000209*	*0.0000540*	*0.000590*	*0.000427*	*0.00186*	*0.0000373*	*0.0000930*	*0.0000398*	*0.000775*
benzo[b]perylene	*0.00106*	*0.000700*	*0.000218*	*0.000209*	*0.0000540*	*0.000590*	*0.000427*	*0.00186*	*0.0000373*	*0.0000930*	*0.0000398*	*0.000775*
dibenzo[a,i]pyrene	*0.000328*	*0.000219*	*0.0000675*	*0.0000650*	*0.0000169*	*0.000184*	*0.000133*	*0.00058*	*0.0000116*	*0.0000289*	*0.0000124*	*0.000241*
dibenzo[a,h]pyrene	*0.000895*	*0.000595*	*0.000185*	*0.000178*	*0.0000460*	*0.000500*	*0.000363*	*0.00158*	*0.0000317*	*0.0000790*	*0.0000398*	*0.000655*

Table S16. PAH air concentrations (ng/m^3) after wildfires. Italicized values indicate 1/2 MDL.

a) After wildfires indoor

Analyte	*Carson, WA*	*Sunriver, OR*	*Corvallis, OR 2*	*Seattle, WA 2*	*Richland, WA*	*Seattle, WA 1*	*Cobb, CA*	*McCall, ID*	*Sandpoint, ID*	*Lake Oswego, OR*	*Prineville, OR*	*Corvallis, OR 1*
naphthalene	464	101	294	176	530	118	290	440	219	216	48.4	190
2-methylnaphthalene	190	36.0	29.8	43.4	248	43.7	66.2	141	135	111	14.8	62.6
1-methylnaphthalene	102	22.3	18.9	24.8	120	25.9	39.8	116	77.8	59.6	5.27	34.3
2-ethylnaphthalene	11.6	3.81	3.74	5.86	14.0	5.61	9.41	12.9	15.7	11.9	*0.0353*	3.82
2,6-dimethylnaphthalene	41.5	18.8	14.5	16.2	44.8	18.4	22.8	54.0	44.0	43.0	5.11	13.7
1,4-dimethylnaphthalene	4.72	4.36	3.10	3.16	6.16	4.98	6.95	15.0	5.33	5.64	1.62	1.53
1,5-dimethylnaphthalene	10.5	*0.0305*	*0.0325*	4.46	7.29	2.07	4.90	6.84	6.62	6.86	1.10	2.06
1,2-dimethylnaphthalene	5.07	6.04	6.65	3.75	11.6	5.54	9.58	10.6	9.98	10.2	2.01	4.20
acenaphthylene	9.19	0.998	0.729	1.23	2.02	3.00	6.37	*0.0338*	*0.0248*	*0.0328*	1.29	*0.0198*
1,8-dimethylnaphthalene	*0.0301*	*0.0296*	*0.0312*	*0.0332*	*0.0366*	*0.0461*	*0.0386*	*0.0275*	*0.0262*	*0.0358*	*0.0317*	*0.0330*
acenaphthene	22.2	38.4	15.1	12.4	36.4	20.8	20.9	21.6	161	*0.0530*	3.33	21.7
2,6-diethylnaphthalene	*0.0112*	*0.00540*	*0.00670*	*0.0106*	*0.00372*	*0.00910*	2.90	*0.00910*	*0.00620*	*0.00825*	*0.0154*	*0.00347*
fluorene	6.85	7.6	6.41	4.97	6.48	5.27	10.3	9.19	27.0	1.76	1.99	4.95
dibenzothiophene	0.935	5.87	2.25	1.46	1.41	4.86	1.97	7.26	1.43	0.236	0.518	0.297
phenanthrene	6.50	26.2	10.8	8.56	8.17	26.3	9.85	23.7	23.8	2.19	4.48	5.80
anthracene	0.318	0.444	*0.00640*	0.229	*0.00237*	*0.00840*	0.723	*0.00920*	*0.00600*	*0.00790*	*0.0161*	*0.00245*
2-methylphenanthrene	0.837	9.98	1.86	1.12	2.09	14.1	1.05	10.8	2.04	0.635	0.714	0.301
1-methylphenanthrene	0.475	7.59	1.05	0.654	*0.00101*	*0.00575*	*0.00740*	*0.00685*	*0.00433*	*0.00560*	*0.0124*	*0.00123*
2-methylanthracene	*0.00402*	*0.00161*	*0.00211*	*0.00367*	1.29	11.8	0.608	9.00	1.02	0.343	0.376	0.138
9-methylanthracene	*0.00685*	*0.00272*	*0.00358*	*0.00625*	*0.000810*	*0.00459*	*0.00590*	*0.00545*	*0.00344*	*0.00448*	*0.00980*	*0.000985*
3,6-dimethylphenanthrene	0.0635	0.364	0.108	0.0555	0.118	0.927	*0.00264*	0.584	0.148	0.0744	*0.00444*	0.0156
2,3-dimethylanthracene	*0.00250*	0.188	0.0440	*0.00227*	0.0512	0.565	*0.00213*	0.326	*0.00125*	*0.00162*	*0.00360*	*0.000330*
fluoranthene	0.215	0.201	0.316	0.383	0.0796	0.636	0.301	0.462	0.769	0.0962	0.314	0.239
9,10-dimethylanthracene	*0.00570*	*0.00221*	*0.00294*	*0.00515*	*0.000570*	*0.00373*	*0.00485*	*0.00453*	*0.00283*	*0.00368*	*0.00820*	*0.000730*
pyrene	0.198	0.257	0.287	0.177	0.104	0.938	0.248	0.519	0.356	0.116	0.221	0.0860
retene	0.245	0.330	0.156	0.0748	0.0495	0.472	0.237	0.283	0.190	0.108	0.311	0.0547
benzo[a]fluorene	*0.0109*	*0.00421*	*0.00560*	*0.00985*	*0.00106*	*0.00710*	*0.00925*	*0.00860*	*0.00540*	*0.00700*	*0.0157*	*0.00138*
benzo[b]fluorene	*0.00710*	*0.00274*	*0.00364*	*0.00645*	*0.000680*	*0.00462*	*0.00600*	*0.00560*	*0.00352*	*0.00456*	*0.0102*	*0.000890*
benzo[c]fluorene	*0.00195*	*0.000760*	*0.00101*	*0.00178*	*0.000196*	*0.00128*	*0.00167*	*0.00155*	0.0360	*0.00126*	*0.00282*	*0.000252*
1-methylpyrene	*0.00204*	*0.000785*	0.0169	*0.00185*	0.00929	0.0650	*0.00173*	*0.00162*	*0.00101*	*0.00131*	*0.00294*	*0.000256*
benz[a]anthracene	*0.00379*	*0.00147*	*0.00195*	*0.00344*	*0.000361*	*0.00247*	*0.00322*	*0.00301*	*0.00188*	*0.00244*	*0.00545*	*0.000473*
cyclopenta[cd]pyrene	*0.00183*	*0.000705*	*0.000935*	*0.00166*	*0.000173*	*0.00119*	*0.00155*	*0.00145*	*0.000905*	*0.00117*	*0.00264*	*0.000227*

triphenylene	*0.00117*	*0.000451*	*0.000600*	*0.00106*	*0.0001123*	*0.000760*	*0.000990*	*0.000925*	*0.000580*	*0.000750*	*0.00169*	*0.000147*
chrysene	*0.00219*	*0.000845*	*0.00112*	*0.00198*	*0.000208*	*0.00142*	*0.00186*	*0.00174*	*0.00109*	*0.00144*	*0.00316*	*0.000273*
5-methylchrysene	*0.00670*	*0.00259*	*0.00345*	*0.00610*	*0.000640*	*0.00437*	*0.00570*	*0.00530*	*0.00333*	*0.00432*	*0.00970*	*0.000835*
6-methylchrysene	*0.00358*	*0.00138*	*0.00184*	*0.00325*	*0.000340*	*0.00233*	*0.00304*	*0.00284*	*0.00177*	*0.00230*	*0.00515*	*0.000446*
benzo[b]fluoranthene	*0.00119*	*0.000458*	*0.000610*	*0.00108*	*0.000113*	*0.000770*	*0.00101*	*0.000940*	*0.000590*	*0.000760*	*0.00172*	*0.000148*
7,12-dimethylbenz[a]anthracene	*0.00392*	*0.00151*	*0.00201*	*0.00356*	*0.000374*	*0.00255*	*0.00333*	*0.00311*	*0.00194*	*0.00252*	*0.00565*	*0.000489*
benzo[k]fluoranthene	*0.00149*	*0.000575*	*0.000760*	*0.00135*	*0.000141*	*0.000965*	*0.00126*	*0.00118*	*0.000735*	*0.000955*	*0.00215*	*0.000185*
benzo[j]fluoranthene	*0.00165*	*0.000635*	*0.000845*	*0.00150*	*0.000157*	*0.00108*	*0.00140*	*0.00131*	*0.000820*	*0.00106*	*0.00238*	*0.000206*
benzo[e]pyrene	*0.00160*	*0.000615*	*0.000820*	*0.00145*	*0.000152*	*0.00104*	*0.00136*	*0.00127*	*0.000790*	*0.00103*	*0.00231*	*0.000199*
benzo[a]pyrene	*0.00316*	*0.00122*	*0.00162*	*0.00287*	*0.000300*	*0.00206*	*0.00269*	*0.00251*	*0.00157*	*0.00203*	*0.00456*	*0.000394*
perylene	*0.00354*	*0.00137*	*0.00182*	*0.00321*	*0.000336*	*0.00230*	*0.00301*	*0.00281*	*0.00175*	*0.00227*	*0.00510*	*0.000440*
indeno[1,2,3-cd]pyrene	*0.000545*	*0.000211*	*0.000280*	*0.000495*	*0.0000515*	*0.000355*	*0.000464*	*0.000433*	*0.000271*	*0.000351*	*0.000790*	*0.0000680*
dibenzo[a,h]anthracene	*0.00197*	*0.000760*	*0.00101*	*0.00179*	*0.000187*	*0.00128*	*0.00168*	*0.00157*	*0.000975*	*0.00127*	*0.00285*	*0.000246*
benzo[a]chrysene	*0.00142*	*0.000545*	*0.000725*	*0.00129*	*0.000134*	*0.000920*	*0.00120*	*0.00113*	*0.000700*	*0.000910*	*0.00205*	*0.000176*
benzo[ghi]perylene	*0.000725*	*0.000280*	*0.000373*	*0.000660*	*0.0000690*	*0.000472*	*0.000615*	*0.000575*	*0.000360*	*0.000467*	*0.00105*	*0.0000905*
anthanthrene	*0.000530*	*0.000204*	*0.000271*	*0.000480*	*0.0000500*	*0.000344*	*0.000449*	*0.00042*	*0.000262*	*0.000340*	*0.000760*	*0.0000655*
naphtho[1,2-b]fluoranthene	*0.00227*	*0.000875*	*0.00117*	*0.00206*	*0.000216*	*0.00148*	*0.00193*	*0.00181*	*0.00113*	*0.00146*	*0.00328*	*0.000283*
naphtho[2,3-b]fluoranthene	*0.00227*	*0.000875*	*0.00117*	*0.00206*	*0.000216*	*0.00148*	*0.00193*	*0.00181*	*0.00113*	*0.00146*	*0.00328*	*0.000283*
dibenzo[a,e]fluoranthene	*0.000640*	*0.000247*	*0.000328*	*0.000580*	*0.0000605*	*0.000416*	*0.000540*	*0.000505*	*0.000317*	*0.000411*	*0.000920*	*0.0000795*
dibenzo[a,l]pyrene	*0.000560*	*0.000217*	*0.000288*	*0.000510*	*0.0000530*	*0.000365*	*0.000476*	*0.000445*	*0.000278*	*0.000360*	*0.000810*	*0.0000695*
naphtho[2,3-k]fluoranthene	*0.00227*	*0.000875*	*0.00117*	*0.00206*	*0.000216*	*0.00148*	*0.00193*	*0.00181*	*0.00113*	*0.00146*	*0.00328*	*0.000283*
naphtho[2,3-e]pyrene	*0.00227*	*0.000875*	*0.00117*	*0.00206*	*0.000216*	*0.00148*	*0.00193*	*0.00181*	*0.00113*	*0.00146*	*0.00328*	*0.000283*
dibenzo[a,e]pyrene	*0.00750*	*0.00290*	*0.00386*	*0.00680*	*0.000715*	*0.00490*	*0.00640*	*0.00595*	*0.00373*	*0.00484*	*0.0109*	*0.000935*
coronene	*0.000685*	*0.000264*	*0.000351*	*0.000620*	*0.0000650*	*0.000445*	*0.000580*	*0.000545*	*0.000339*	*0.000440*	*0.000990*	*0.0000850*
dibenzo[e,l]pyrene	*0.00227*	*0.000875*	*0.00117*	*0.00206*	*0.000216*	*0.001480*	*0.00193*	*0.00181*	*0.00113*	*0.00146*	*0.00328*	*0.000283*
naphtho[2,3-a]pyrene	*0.00227*	*0.000875*	*0.00117*	*0.00206*	*0.000216*	*0.001480*	*0.00193*	*0.00181*	*0.00113*	*0.00146*	*0.00328*	*0.000283*
benzo[b]perylene	*0.00227*	*0.000875*	*0.00117*	*0.00206*	*0.000216*	*0.001480*	*0.00193*	*0.00181*	*0.00113*	*0.00146*	*0.00328*	*0.000283*
dibenzo[a,i]pyrene	*0.000705*	*0.000273*	*0.000363*	*0.000640*	*0.0000670*	*0.000460*	*0.000600*	*0.000560*	*0.000351*	*0.000455*	*0.00102*	*0.0000880*
dibenzo[a,h]pyrene	*0.00193*	*0.000745*	*0.000990*	*0.00175*	*0.000183*	*0.00126*	*0.00164*	*0.00154*	*0.000955*	*0.00124*	*0.00279*	*0.000241*

b) After wildfires outdoor

Analyte	*Carson, WA*	*Sunriver, OR*	*Corvallis, OR 2*	*Seattle, WA 2*	*Richland, WA*	*Seattle, WA 1*	*Cobb, CA*	*McCall, ID*	*Sandpoint, ID*	*Lake Oswego, OR*	*Prineville, OR*	*Corvallis, OR 1*
naphthalene	36.6	15.2	41.8	33.0	82.8	64.5	51.0	22.1	116	49.3	9.88	60.0
2-methylnaphthalene	8.68	2.88	9.46	10.1	21.6	12.1	6.61	2.10	52.6	10.8	0.447	20.1
1-methylnaphthalene	6.19	2.43	8.02	7.13	8.45	7.19	2.62	0.969	27.8	6.25	0.164	12.8

2-ethylnaphthalene	0.590	0.261	0.711	0.976	1.03	1.19	*0.0279*	0.251	3.44	1.09	*0.0145*	1.21
2,6-dimethylnaphthalene	1.66	0.640	2.58	2.98	3.24	3.15	0.903	0.355	9.23	3.24	0.121	3.68
1,4-dimethylnaphthalene	0.255	0.104	0.439	0.634	2.70	0.661	0.176	0.0808	0.992	0.413	*0.0153*	0.434
1,5-dimethylnaphthalene	0.458	0.217	0.831	0.707	0.412	0.441	0.147	0.0732	1.22	0.544	*0.0143*	0.674
1,2-dimethylnaphthalene	0.363	0.200	0.516	0.638	0.966	0.842	*0.0274*	0.144	1.85	0.866	0.106	1.14
acenaphthylene	0.444	0.193	0.476	0.328	*0.0174*	*0.0165*	*0.0168*	*0.00890*	0.359	*0.0125*	*0.00855*	*0.0113*
1,8-dimethylnaphthalene	*0.0142*	*0.00760*	*0.0131*	*0.0127*	*0.0291*	*0.0275*	*0.0278*	*0.0140*	*0.0146*	*0.0206*	*0.0140*	*0.0186*
acenaphthene	2.59	1.42	2.69	8.01	*0.0432*	3.97	*0.0414*	*0.0210*	40.4	6.60	*0.0210*	*0.0278*
2,6-diethylnaphthalene	*0.00119*	*0.00160*	*0.00204*	*0.00301*	*0.00276*	*0.00260*	0.0456	*0.00154*	*0.00120*	*0.00187*	0.0210	*0.00167*
fluorene	1.60	0.529	1.08	2.26	0.427	1.33	0.362	0.172	8.34	1.47	0.133	1.78
dibenzothiophene	0.0272	0.0166	0.0546	0.18	0.0208	0.0342	0.0332	0.0172	0.157	0.0406	0.00364	0.0331
phenanthrene	2.09	1.43	1.98	5.14	0.646	1.09	0.622	0.321	6.44	0.896	0.161	1.60
anthracene	0.181	0.117	0.178	0.222	*0.00160*	*0.00148*	0.0639	*0.00129*	*0.000720*	*0.00122*	*0.000675*	*0.00112*
2-methylphenanthrene	0.149	0.159	0.207	0.515	0.0480	0.0780	0.0981	0.0550	0.163	0.0727	0.0120	0.455
1-methylphenanthrene	0.136	0.212	0.179	0.318	*0.000447*	*0.000339*	*0.000895*	*0.000780*	*0.000213*	*0.000515*	*0.000135*	*0.000498*
2-methylanthracene	0.0141	0.0122	0.0193	0.0283	0.0248	0.0359	0.0621	0.0457	0.0690	0.0414	0.0133	0.213
9-methylanthracene	*0.000250*	*0.000910*	*0.00103*	*0.00173*	*0.000365*	*0.000279*	*0.000720*	*0.000625*	*0.000173*	*0.000416*	*0.000111*	*0.000400*
3,6-dimethylphenanthrene	0.00436	*0.000408*	0.00906	0.0358	0.00378	0.00374	*0.000294*	*0.000270*	0.00466	0.00565	0.0000314	0.0412
2,3-dimethylanthracene	*0.0000795*	*0.000330*	*0.000371*	*0.000625*	*0.000101*	*0.0000685*	*0.000238*	*0.000219*	*0.0000497*	*0.000134*	*0.0000254*	*0.000130*
fluoranthene	0.144	0.144	0.200	0.618	0.0362	0.0317	0.0574	0.0370	0.207	0.0754	0.00301	0.09530
9,10-dimethylanthracene	*0.000175*	*0.000750*	*0.000840*	*0.00143*	*0.000212*	*0.000138*	*0.000525*	*0.000493*	*0.000106*	*0.000295*	*0.0000505*	*0.000288*
pyrene	0.111	0.138	0.139	0.349	0.0316	0.0240	0.0501	0.0272	0.0894	0.0509	0.00162	0.0911
retene	0.218	0.471	0.282	0.284	0.00978	0.0175	0.0743	0.0500	0.0403	0.0229	0.0155	0.0603
benzo[a]fluorene	0.00659	0.00778	*0.00160*	0.0198	*0.000386*	*0.000246*	*0.000990*	*0.000935*	0.00189	*0.000550*	*0.0000890*	0.00603
benzo[b]fluorene	0.00298	0.00642	*0.00104*	0.0125	*0.000245*	*0.000154*	*0.000640*	*0.000605*	*0.000125*	*0.000355*	*0.0000555*	*0.000349*
benzo[c]fluorene	*0.0000600*	*0.000258*	*0.000289*	*0.000490*	*0.0000730*	*0.0000475*	*0.000181*	*0.000169*	*0.0000364*	*0.000101*	*0.0000173*	*0.0000985*
1-methylpyrene	0.00424	0.00654	0.00790	0.0164	0.00153	*0.0000441*	*0.000184*	*0.000175*	0.00117	0.00142	*0.0000159*	0.00451
benz[a]anthracene	0.00542	0.0178	0.0131	0.0202	*0.000128*	*0.0000790*	*0.000339*	*0.000324*	*0.0000655*	*0.000188*	*0.0000285*	*0.000185*
cyclopenta[cd]pyrene	0.00226	0.0122	0.0117	0.0272	*0.0000610*	*0.0000377*	*0.000163*	*0.000156*	*0.0000314*	*0.0000905*	*0.0000136*	*0.0000890*
triphenylene	0.00167	0.00493	0.00658	0.00880	*0.0000402*	*0.0000252*	*0.000105*	*0.000100*	*0.0000205*	*0.0000585*	*0.00000905*	*0.0000575*
chrysene	0.00643	0.0142	0.00999	0.0193	*0.0000735*	*0.0000456*	*0.000195*	*0.000187*	*0.0000378*	*0.000109*	*0.0000164*	*0.000107*
5-methylchrysene	*0.000198*	*0.000885*	*0.000985*	*0.00168*	*0.000225*	*0.000139*	*0.000600*	*0.000575*	*0.000116*	*0.000333*	*0.0000500*	*0.000327*
6-methylchrysene	*0.000105*	*0.000472*	*0.000525*	*0.000895*	*0.000120*	*0.0000740*	*0.000319*	*0.000306*	*0.0000615*	*0.000177*	*0.0000267*	*0.000174*
benzo[b]fluoranthene	0.00129	0.00824	0.00659	0.0148	*0.0000397*	*0.0000245*	*0.000106*	*0.000102*	*0.0000204*	*0.0000590*	*0.00000880*	*0.0000580*
7,12-dimethylbenz[a]anthracene	*0.000116*	*0.000515*	*0.000575*	*0.000980*	*0.000132*	*0.0000820*	*0.000350*	*0.000335*	*0.0000675*	*0.000195*	*0.0000294*	*0.000191*
benzo[k]fluoranthene	*0.0000437*	0.00369	*0.000219*	*0.000372*	*0.0000496*	*0.0000306*	*0.000133*	*0.000127*	*0.0000256*	*0.0000735*	*0.0000110*	*0.0000720*

benzo[j]fluoranthene	0.000691	0.00560	0.00316	0.00722	*0.0000550*	*0.0000340*	*0.000147*	*0.000141*	*0.0000284*	*0.0000815*	*0.0000123*	*0.0000800*
benzo[e]pyrene	0.000524	0.00367	0.00325	0.00734	*0.0000530*	*0.0000329*	*0.000143*	*0.000137*	*0.0000275*	*0.0000790*	*0.0000119*	*0.0000775*
benzo[a]pyrene	0.000638	0.00735	0.00426	0.0106	*0.000106*	*0.0000650*	*0.000282*	*0.00027*	*0.0000545*	*0.000157*	*0.0000235*	*0.000154*
perylene	*0.000104*	*0.000467*	*0.000520*	*0.000885*	*0.000118*	*0.0000730*	*0.000315*	*0.000302*	*0.0000610*	*0.000175*	*0.0000262*	*0.000172*
indeno[1,2,3-cd]pyrene	*0.0000161*	*0.0000720*	*0.0000800*	*0.000137*	*0.0000182*	*0.0000112*	*0.0000486*	*0.0000466*	*0.00000940*	*0.0000270*	*0.00000404*	*0.0000266*
dibenzo[a,h]anthracene	*0.0000580*	*0.000260*	*0.000290*	*0.000494*	*0.0000655*	*0.0000406*	*0.000176*	*0.000169*	*0.0000339*	*0.0000975*	*0.0000146*	*0.0000960*
benzo[a]chrysene	*0.0000416*	*0.000187*	*0.000208*	*0.000355*	*0.0000472*	*0.0000291*	*0.000126*	*0.000121*	*0.0000243*	*0.0000700*	*0.0000105*	*0.0000690*
benzo[ghi]perylene	*0.0000214*	0.00308	*0.000107*	0.00796	*0.0000242*	*0.0000150*	*0.0000645*	*0.0000620*	*0.0000123*	*0.0000359*	*0.00000540*	*0.0000353*
anthanthrene	*0.0000155*	*0.0000695*	*0.0000775*	*0.000133*	*0.0000176*	*0.0000109*	*0.0000471*	*0.0000452*	*0.00000910*	*0.0000262*	*0.00000391*	*0.0000257*
naphtho[1,2-b]fluoranthene	*0.0000670*	*0.000300*	*0.000334*	*0.000570*	*0.0000755*	*0.0000468*	*0.000203*	*0.000194*	*0.0000391*	*0.000113*	*0.0000168*	*0.000111*
naphtho[2,3-b]fluoranthene	*0.0000670*	*0.000300*	*0.000334*	*0.000570*	*0.0000755*	*0.0000468*	*0.000203*	*0.000194*	*0.0000391*	*0.000113*	*0.0000168*	*0.000111*
dibenzo[a,e]fluoranthene	*0.0000188*	*0.0000845*	*0.0000940*	*0.000160*	*0.0000213*	*0.0000132*	*0.0000570*	*0.0000545*	*0.0000110*	*0.0000317*	*0.00000474*	*0.0000311*
dibenzo[a,l]pyrene	*0.0000165*	*0.0000740*	*0.0000825*	*0.000141*	*0.0000187*	*0.0000116*	*0.0000500*	*0.0000479*	*0.00000965*	*0.0000278*	*0.00000415*	*0.0000273*
naphtho[2,3-k]fluoranthene	*0.0000670*	*0.000300*	*0.000334*	*0.000570*	*0.0000755*	*0.0000468*	*0.000203*	*0.000194*	*0.0000391*	*0.000113*	*0.0000168*	*0.000111*
naphtho[2,3-e]pyrene	*0.000067*	*0.000300*	*0.000334*	*0.000570*	*0.0000755*	*0.0000468*	*0.000203*	*0.000194*	*0.0000391*	*0.000113*	*0.0000168*	*0.000111*
dibenzo[a,e]pyrene	*0.000221*	*0.000990*	*0.001105*	*0.001885*	*0.0002505*	*0.000155*	*0.000670*	*0.000640*	*0.000129*	*0.000372*	*0.0000555*	*0.000366*
coronene	*0.0000201*	*0.0000905*	*0.0001001*	*0.000172*	*0.0000228*	*0.0000141*	*0.0000610*	*0.0000585*	*0.0000118*	*0.0000339*	*0.00000505*	*0.0000333*
dibenzo[e,l]pyrene	*0.0000670*	*0.000300*	*0.000334*	*0.000570*	*0.0000755*	*0.0000468*	*0.000203*	*0.000194*	*0.0000391*	*0.000113*	*0.0000168*	*0.000111*
naphtho[2,3-a]pyrene	*0.0000670*	*0.000300*	*0.000334*	*0.000570*	*0.0000755*	*0.0000468*	*0.000203*	*0.000194*	*0.0000391*	*0.000113*	*0.0000168*	*0.000111*
benzo[b]perylene	*0.0000670*	*0.000300*	*0.000334*	*0.000570*	*0.0000755*	*0.0000468*	*0.000203*	*0.000194*	*0.0000391*	*0.000113*	*0.0000168*	*0.000111*
dibenzo[a,i]pyrene	*0.0000208*	*0.0000935*	*0.000104*	*0.000177*	*0.0000236*	*0.0000146*	*0.0000630*	*0.0000605*	*0.0000122*	*0.0000350*	*0.00000525*	*0.0000344*
dibenzo[a,h]pyrene	*0.0000570*	*0.000255*	*0.000284*	*0.000484*	*0.0000645*	*0.0000398*	*0.000172*	*0.000165*	*0.0000332*	*0.0000955*	*0.0000143*	*0.0000940*

Table S17. Relative standard deviation of replicate analysis in Newport, OR ($\%\mathrm{RSD} = \frac{\text{Standard deviation}}{\text{Average}} \cdot 100$).

Analyte	Newport, OR Outdoor 1 (ng/m^3)	Newport, OR Outdoor 2 (ng/m^3)	Newport, OR Outdoor 3 (ng/m^3)	%RSD
naphthalene	65.7	71.1	65.2	6.16
2-methylnaphthalene	8.01	8.67	8.36	2.56
1-methylnaphthalene	5.93	6.60	6.35	2.79
2-ethylnaphthalene	0.657	0.635	0.598	4.24
2,6-dimethylnaphthalene	1.39	1.35	1.38	1.39
1,4-dimethylnaphthalene	0.287	0.248	0.263	3.95
1,5-dimethynaphthalene	0.307	0.320	0.355	7.64
acenaphthylene	0.642	0.721	0.670	5.37
acenaphthene	2.29	2.30	2.29	0.157
fluorene	0.641	0.708	0.743	3.60
dibenzothiophene	0.0285	0.0455	0.0174	65.3
phenanthrene	0.921	1.49	0.760	49.0
anthracene	0.0779	0.124	0.0601	51.8
2-methylphenanthrene	0.107	0.196	0.059	80.0
2-methylanthracene	0.0659	0.123	0.0324	87.0
fluoranthene	0.111	0.215	0.0465	96.0
9,10-dimethylanthracene	0.00111	0.00183	0.000314	98.9
pyrene	0.0988	0.193	0.0407	97.2
retene	0.0649	0.127	0.0240	101
benzo(a)fluorene	0.00658	0.0113	0.00223	95.7
benzo(b)fluorene	0.00439	0.00828	0.00138	104
benzo(c)fluorene	0.000381	0.000629	0.000495	18.8

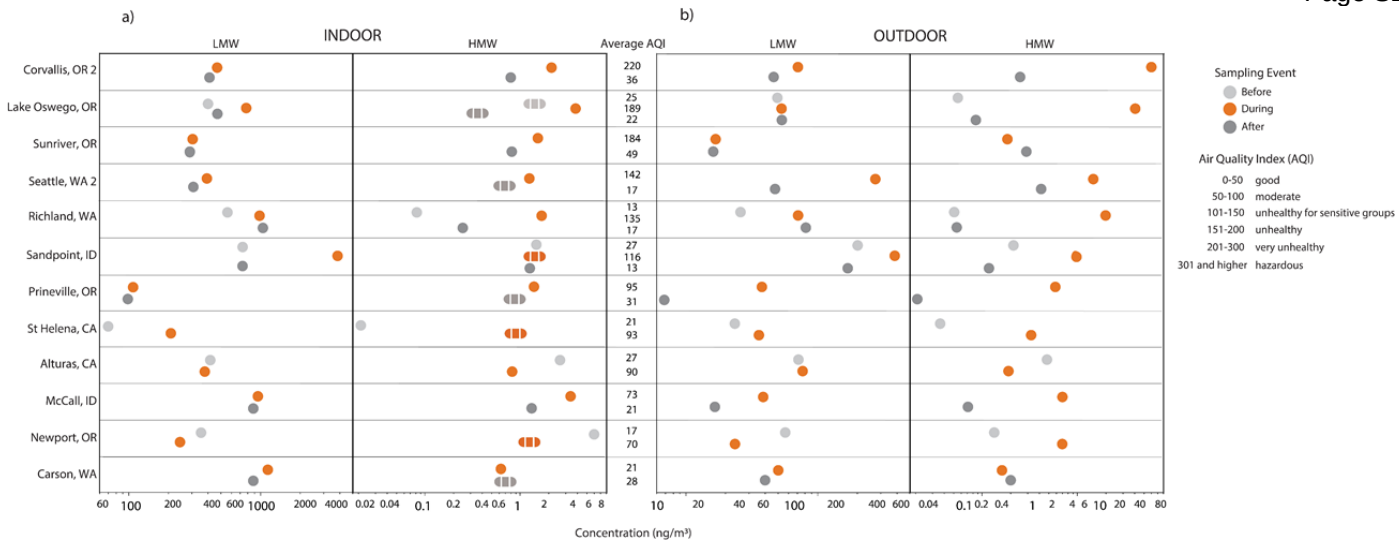

Figure S3. Vapor-phase PAH concentrations before, during and after wildfire summed by light molecular weight (LMW) and heavy molecular-weight (HMW) for a) indoor air and b) outdoor air. LMW PAHs are defined as having 2- to 3-rings, while HMW PAHs are defined as having four or more rings. Locations are ordered by increasing average AQI during wildfires. Dashed markers represent the concentration interval when non-detected compounds = 0 and non-detected compounds = one half of the detection limit.

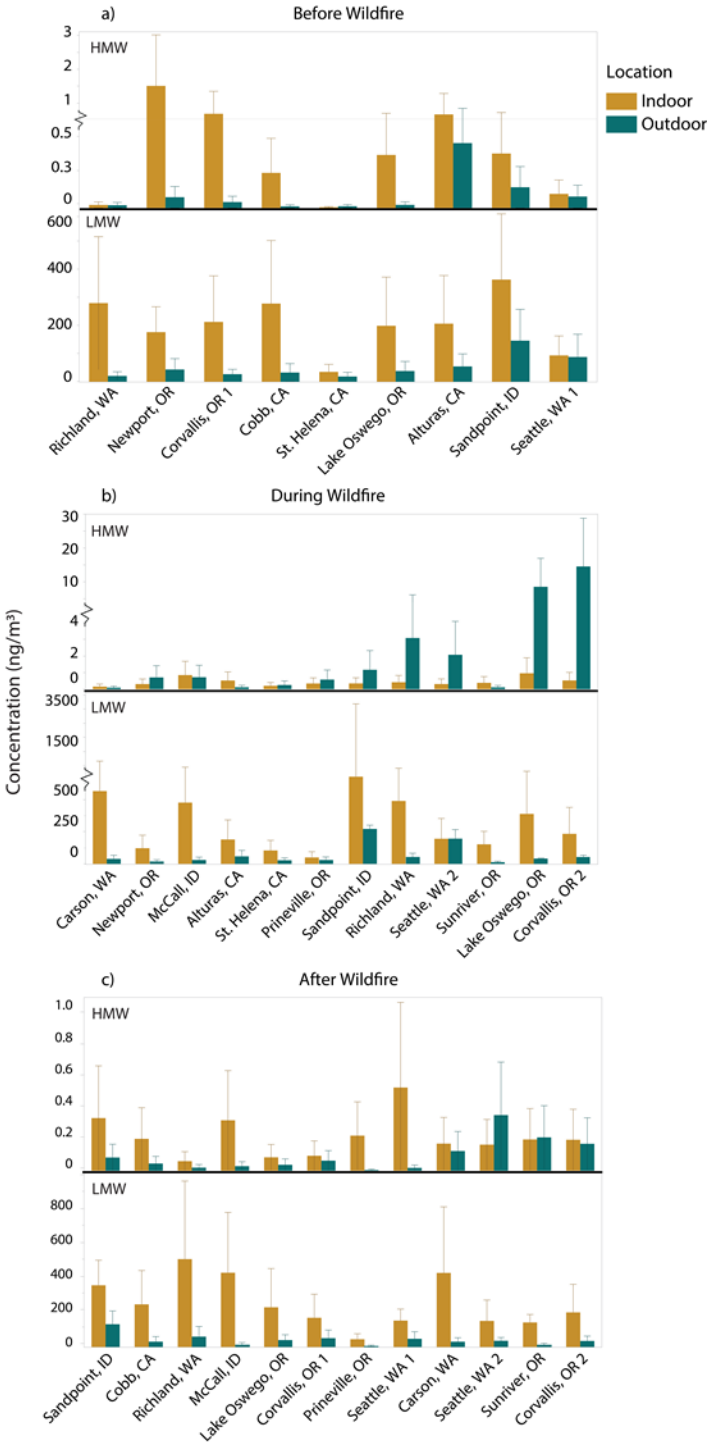

Figure S4. Indoor and outdoor vapor-phase PAH concentrations (note change in y-axis between figures) a) before b) during (ordered by increasing AQI) and c) after wildfires. PAHs are summed and grouped by LMW and HMW.

Table S18. Inhalation PAH excess lifetime cancer risk estimations for indoor and outdoor vapor-phase PAH air concentrations before, during and after wildfires. Values in bold indicate the higher risk for a particular site.

	Location	No wildfire	Wildfire	After wildfire	Wildfire Average AQI
Indoor	Carson, WA	N/A	**3.7E-07**	2.9E-07	21
	Newport, OR	**1.1E-06**	2.0E-07	N/A	70
	McCall, ID	N/A	**5.4E-07**	3.5E-07	73
	Alturas, CA	**7.8E-07**	4.6E-07	N/A	90
	St Helena, CA	3.7E-08	**4.3E-07**	N/A	93
	Prineville, OR	N/A	7.7E-08	**1.2E-07**	95
	Sandpoint, ID	4.0E-07	**1.6E-06**	3.3E-07	116
	Richland, WA	1.6E-07	**4.1E-07**	2.8E-07	135
	Seattle, WA 2	N/A	**3.1E-07**	2.0E-07	142
	Sunriver, OR	N/A	**1.4E-07**	1.1E-07	184
	Lake Oswego, OR	3.1E-07	**4.9E-07**	1.5E-07	189
	Corvallis, OR 2	N/A	**4.1E-07**	2.5E-07	220
Outdoor	Carson, WA	N/A	**1.4E-08**	1.0E-08	21
	Newport, OR	9.3E-09	**1.6E-08**	N/A	70
	McCall, ID	N/A	**5.4E-07**	3.1E-09	73
	Alturas, CA	**5.9E-08**	1.4E-08	N/A	90
	St Helena, CA	3.2E-09	**1.3E-08**	N/A	93
	Prineville, OR	N/A	**1.1E-08**	8.4E-10	95
	Sandpoint, ID	2.5E-08	**1.5E-07**	1.7E-08	116
	Richland, WA	4.9E-09	**7.6E-08**	9.8E-09	135
	Seattle, WA 2	N/A	**2.4E-07**	4.8E-08	142
	Sunriver, OR	N/A	8.6E-09	**2.8E-08**	184
	Lake Oswego, OR	8.1E-09	**4.5E-07**	1.0E-08	189
	Corvallis, OR 2	N/A	**1.2E-06**	2.9E-08	220

Table S19. Inhalation PAH hazard quotient estimations for indoor and outdoor vapor-phase PAH air concentrations before, during and after wildfires. Values in bold indicate the higher risk for a particular site.

	Location	No wildfire	Wildfire	After wildfire	Wildfire Average AQI
Indoor	Carson, WA	N/A	**4.2E-03**	3.1E-03	21
	Newport, OR	**9.6E-04**	8.2E-04	N/A	70
	McCall, ID	N/A	**2.9E-03**	2.8E-03	73
	Alturas, CA	**1.5E-03**	1.4E-03	N/A	90
	St Helena, CA	2.4E-04	**6.8E-04**	N/A	93
	Prineville, OR	N/A	**4.0E-04**	3.0E-04	95
	Sandpoint, ID	2.4E-03	**1.5E-02**	1.7E-03	116
	Richland, WA	2.0E-03	3.6E-03	**3.7E-03**	135
	Seattle, WA 2	N/A	**1.5E-03**	1.0E-03	142
	Sunriver, OR	N/A	**8.9E-04**	4.8E-04	184
	Lake Oswego, OR	1.4E-03	**2.7E-03**	1.6E-03	189
	Corvallis, OR 2	N/A	**2.0E-03**	1.5E-03	220
Outdoor	Carson, WA	N/A	**4.1E-05**	3.2E-05	21
	Newport, OR	**5.0E-05**	1.7E-05	N/A	70
	McCall, ID	N/A	**3.2E-05**	1.6E-05	73
	Alturas, CA	5.9E-05	**6.4E-05**	N/A	90
	St Helena, CA	2.1E-05	**2.8E-05**	N/A	93
	Prineville, OR	N/A	**3.5E-05**	6.7E-06	95
	Sandpoint, ID	1.6E-04	1.9E-04	**1.7E-03**	116
	Richland, WA	2.1E-05	5.3E-05	**7.0E-05**	135
	Seattle, WA 2	N/A	**2.7E-05**	1.1E-05	142
	Sunriver, OR	N/A	4.8E-07	**7.4E-06**	184
	Lake Oswego, OR	1.28E-07	**5.1E-05**	1.8E-07	189
	Corvallis, OR 2	N/A	**1.7E-04**	4.0E-05	220

References

1. Huckins, J. N. P., J. D.; Booij, K., *Monitors of the organic chemicals in the environment*. Springer: New York, NY, 2006; p 223.
2. Lohmann, R., Critical Review of Low-Density Polyethylene's Partitioning and Diffusion Coefficients for Trace Organic Contaminants and Implications for Its Use As a Passive Sampler. *Environmental Science & Technology* **2012,** *46* (2), 606-618.
3. Khairy, M. A.; Lohmann, R., Field Validation of Polyethylene Passive Air Samplers for Parent and Alkylated PAHs in Alexandria, Egypt. *Environmental Science & Technology* **2012,** *46* (7), 3990-3998.
4. Donald, C. E.; Anderson, K. A., Assessing soil-air partitioning of PAHs and PCBs with a new fugacity passive sampler. *Science of The Total Environment* **2017,** *596-597*, 293-302.
5. Minick, D. J.; Anderson, K. A., Diffusive flux of PAHs across sediment–water and water–air interfaces at urban superfund sites. *Environ. Toxicol. and Chem.* **2017,** *36* (9), 2281-2289.
6. United States Environmental Protection Agency, Risk Assessment Guidance for Superfund Office of Superfund Remediation and Technology Innovation, Ed. 2009; Vol. I: Human Health Evaluation Manual.
7. Klepeis, N. E.; Nelson, W. C.; Ott, W. R.; Robinson, J. P.; Tsang, A. M.; Switzer, P.; Behar, J. V.; Hern, S. C.; Engelmann, W. H., The National Human Activity Pattern Survey (NHAPS): a resource for assessing exposure to environmental pollutants. *Journal of Exposure Science & Environmental Epidemiology* **2001,** *11* (3), 231-252.
8. United States Environmental Protection Agency, Integrated Risk Information System Assessments. Office of Research and Development, : 2017.
9. United States Environmental Protection Agency, Provisional Peer-Reviewed Toxicity Values (PPRTVs) Assessments. Office of Research and Development,: 2013.
10. California Environmental Protection Agency, Toxic Air Contaminant List with Staff Reports/Executive Summaries. California Office of Environmental Health Hazard Assessment: 2008.
11. United States Environmental Protection Agency, CompTox Chemicals Dashboard. Office of Research and Development,.
12. Oregon Department of Environmental Quality and Oregon Health Authority, Cleaner Air Oregon Toxicity Refererence Values. State of Oregon: 2018.
13. United States Environmental Protection Agency, Human Health Toxicity Values in Superfund Risk Assessments Memorandum. Office of Superfund Remediation and Technology Innovation, Ed. 2003.