Impact of the Improved Patsari Biomass Stove on Urinary Polycyclic Aromatic Hydrocarbons Biomarkers and Carbon Monoxide Exposures in Rural Mexican Women

Supplemental Material

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Supplemental Table 1. Urinary OH-PAH biomarkers (µg/L urine) for pre- and post-intervention stages (N=47)

| Metabolite (µg/L urine) | Stage | GM [95% CI] | Percentiles of distribution | % median reduction (p-value) |
|-------------------------|-------|-------------|-----------------------------|-----------------------------|
|                         |       | GM [95% CI] | 50%  | 75%  | 90%  | 95%  |                                |                            |
| 1-hydroxypyrene (1-PYR) | Pre   | 4.30 (3.43-5.40) | 4.23 | 7.76 | 11.0 | 13.4 |                                |                            |
|                         | Post  | 2.27 (1.82-28.3)  | 2.26 | 4.44 | 5.66 | 5.91 |                                | 47 (<0.001)                |
| 1-hydroxynaphthalene (1-NAP) | Pre | 25.9 (20.4-32.8)  | 24.2 | 44.3 | 69.7 | 80.9 |                                | 57 (<0.001)                |
|                         | Post  | 11.0 (8.14-14.9)   | 13.7 | 23.3 | 32.4 | 43.1 |                                |                            |
| 2-hydroxynaphthalene (2-NAP) | Pre | 20.1 (17.0-23.9)  | 20.3 | 31.6 | 45.0 | 54.9 |                                | 43 (<0.001)                |
|                         | Post  | 11.6 (9.62-13.9)   | 13.3 | 19.3 | 23.7 | 24.6 |                                |                            |
| 2-hydroxyfluorene (2-FLUO) | Pre | 3.62 (2.99-4.37)  | 3.74 | 6.11 | 8.46 | 8.88 |                                | 36 (0.001)                 |
|                         | Post  | 2.33 (1.94-2.80)   | 2.54 | 3.75 | 4.87 | 5.95 |                                |                            |
| 3-hydroxyfluorene (3-FLUO) | Pre | 1.61 (1.32-1.97)  | 1.60 | 2.65 | 3.96 | 4.04 |                                | 46 (<0.001)                |
|                         | Post  | 0.863 (0.708-1.05) | 0.883 | 1.37 | 2.13 | 2.67 |                                |                            |
| 9-hydroxyfluorene (9-FLUO) | Pre | 5.13 (4.36-6.04)  | 5.05 | 7.02 | 10.8 | 11.7 |                                | 33 (0.004)                 |
|                         | Post  | 3.42 (2.81-4.15)   | 3.59 | 6.01 | 7.43 | 8.44 |                                |                            |
| 1-hydroxyphenanthrene (1-PHEN) | Pre | 3.39 (2.79-4.11)  | 3.98 | 5.64 | 7.71 | 8.73 |                                | 40 (<0.001)                |
|                         | Post  | 2.03 (1.62-2.53)   | 2.45 | 3.67 | 4.50 | 5.29 |                                |                            |
|                |                | Pre          | Post         | 1.66   | 2.62 | 3.69 | 4.34 |       | 33   | 1.11   | 1.76 | 2.74 | 2.80 |       | (0.007) |
|----------------|----------------|--------------|--------------|--------|------|------|------|-------|------|--------|------|------|------|-------|----------|
| 2-             | hydroxyphenanthrene |            |              |        |      |      |      | GM: Geometric mean; CI: Confidence interval | P-value for Wilcoxon matched-pairs signed rank test indicated in parenthesis |
| (2-PHEN)       |                |              |              |        |      |      |      |       |      |        |      |      |      |       |          |
|                |                | 1.66         | 1.20         | 1.66   | 2.03 | 4.99 | 5.27 |       | 2.00 |        |      |      |      |       | <0.001  |
|                |                | (1.37-2.01)  | (0.92-1.35)  | 1.66   | 2.03 | 4.99 | 5.27 |       | 2.00 |        |      |      |      |       | <0.001  |
|                |                |              |              |        |      |      |      |       |      |        |      |      |      |       |          |
| 3-             | hydroxyphenanthrene |            |              |        |      |      |      |       |      |        |      |      |      |       |          |
| (3-PHEN)       |                |              |              |        |      |      |      |       |      |        |      |      |      |       |          |
| 4-             | hydroxyphenanthrene |            |              |        |      |      |      |       |      |        |      |      |      |       |          |
| (4-PHEN)       |                |              |              |        |      |      |      |       |      |        |      |      |      |       |          |
|                |                |              |              |        |      |      |      |       |      |        |      |      |      |       |          |
| Sum of ten OH-PAH metabolites |          |              |              |        |      |      |      |       |      |        |      |      |      |       |          |
|                |                |              |              |        |      |      |      |       |      |        |      |      |      |       |          |
|                |                | 0.665        | 0.455        | 0.660  | 1.07 | 1.49 | 1.60 |       | 0.665 |        |      |      |      |       | <0.001  |
|                |                | (0.555-0.797)| (0.318-0.474)| 0.660  | 1.07 | 1.49 | 1.60 |       | 0.665 |        |      |      |      |       | <0.001  |
|                |                |              |              |        |      |      |      |       |      |        |      |      |      |       |          |
|                |                | 0.388        | 0.455        | 0.455  | 0.642| 0.829| 0.928|       | 0.388 |        |      |      |      |       | <0.001  |
|                |                | (0.555-0.797)| (0.318-0.474)| 0.455  | 0.642| 0.829| 0.928|       | 0.388 |        |      |      |      |       | <0.001  |
|                |                |              |              |        |      |      |      |       |      |        |      |      |      |       |          |
|                |                | 70.2         | 37.8         | 65.9   | 115  | 166  | 188  |       | 70.2  |        |      |      |      |       | <0.001  |
|                |                | (57.9-85.2)  | (31.2-46.5)  | 65.9   | 115  | 166  | 188  |       | 70.2  |        |      |      |      |       | <0.001  |
|                |                |              |              |        |      |      |      |       |      |        |      |      |      |       |          |
|                |                |              |              |        |      |      |      |       |      |        |      |      |      |       |          |