

Supplementary Information

Table S1. Climatological conditions recorded at the start and end of sample collection

| Climatological conditions | Mean \pm SD | |
|---------------------------------|----------------|----------------|
| | Day1 | Day 2 |
| Air temperature ($^{\circ}$ C) | 31.1 \pm 1.7 | 28.6 \pm 1.8 |
| Relative humidity (%) | 59.5 \pm 1.5 | 61.2 \pm 2.5 |

Table S2: Spike recoveries and RSD values for all target compounds

| Target compound | Spike samples | | | Mean recovery (%) | % RSD |
|-----------------|---------------------------|----------------------------|-----------------------------|-------------------|-------|
| | 5 μ g L ⁻¹ | 50 μ g L ⁻¹ | 200 μ g L ⁻¹ | | |
| Ametryn | 4.69 | 42.01 | 246.49 | 100.4 | 20.3 |
| Atrazine | 6.45 | 62.51 | 204.70 | 118.8 | 12.1 |
| Pendimethalin | 4.30 | 49.72 | 132.15 | 83.8 | 20.0 |
| 2,4-D | 4.24 | 35.99 | 145.87 | 76.6 | 9.4 |

Table S3. Non-carcinogenic health risks of the pesticides

| Target compounds | Chemical Group ^a | Cancer classification ^b | RfD (mg kg ⁻¹ day ⁻¹) ^c |
|------------------|-----------------------------|---|---|
| Ametryn | Triazine | Suggestive evidence of carcinogenic potential | 0.009 |
| Atrazine | Triazine | Not likely to be carcinogenic to humans | 0.035 |
| Pendimethalin | Dinitroaniline | Group C. Possible human carcinogen | 0.04 |
| 2,4-D | Alkylchlorophenoxy | Group D. Not classifiable as to human carcinogenicity | 0.01 |

^a Pesticide Properties DataBase (PPDB). <http://sitem.herts.ac.uk/aeru/ppdb/> (accessed April 2020).

^b USEPA (2018). Chemicals Evaluated for Carcinogenic Potential (Annual Cancer Report 2018). http://npic.orst.edu/chemicals_evaluated.pdf (accessed April 2020).

^c USEPA (2020). Integrated Risk Information System (IRIS). <https://cfpub.epa.gov/ncea/risk/recorddisplay.cfm?deid=2776> (accessed March 2020).

Table S4. Exposure parameters used to conduct the probabilistic risk assessment of inhalation exposure to pesticides

| Exposure parameter | Mean | Probability distribution | References |
|---|-------------|---------------------------------|--------------------------|
| <i>Inhalation rate (m³ day⁻¹)</i> | | | |
| <0.5 | 4.1 | Lognormal | USEPA, 2011 ^a |
| 0.5–0.9 | 5.4 | Lognormal | USEPA, 2011 |
| 1–3 | 8.9 | Lognormal | USEPA, 2011 |
| 4–12 | 12 | Lognormal | USEPA, 2011 |
| 13–18 | 15.2 | Lognormal | USEPA, 2011 |
| 19–65 | 16.3 | Lognormal | USEPA, 2011 |
| >65 | 14.2 | Lognormal | USEPA, 2011 |
| <i>Body weight (kg)</i> | | | |
| <0.5 | 7.4 | Lognormal | USEPA, 2011 |
| 0.5–0.9 | 9.2 | Lognormal | USEPA, 2011 |
| 1–3 | 13.8 | Lognormal | USEPA, 2011 |
| 4–12 | 31.8 | Lognormal | USEPA, 2011 |
| 13–18 | 56.8 | Lognormal | USEPA, 2011 |
| 19–65 | 68.1 | Lognormal | DRFSR, 2014 ^b |
| >65 | 68.1 | Lognormal | DRFSR, 2014 |

^a USEPA. Exposure Factors Handbook: 2011 Edition (2011). <https://www.nrc.gov/docs/ML1400/ML14007A666.pdf>

^b Eswatini Government. Noncommunicable Disease Risk Factor Surveillance Report. (2014). https://www.who.int/ncds/surveillance/steps/Swaziland_2014_STEPS_Report.pdf

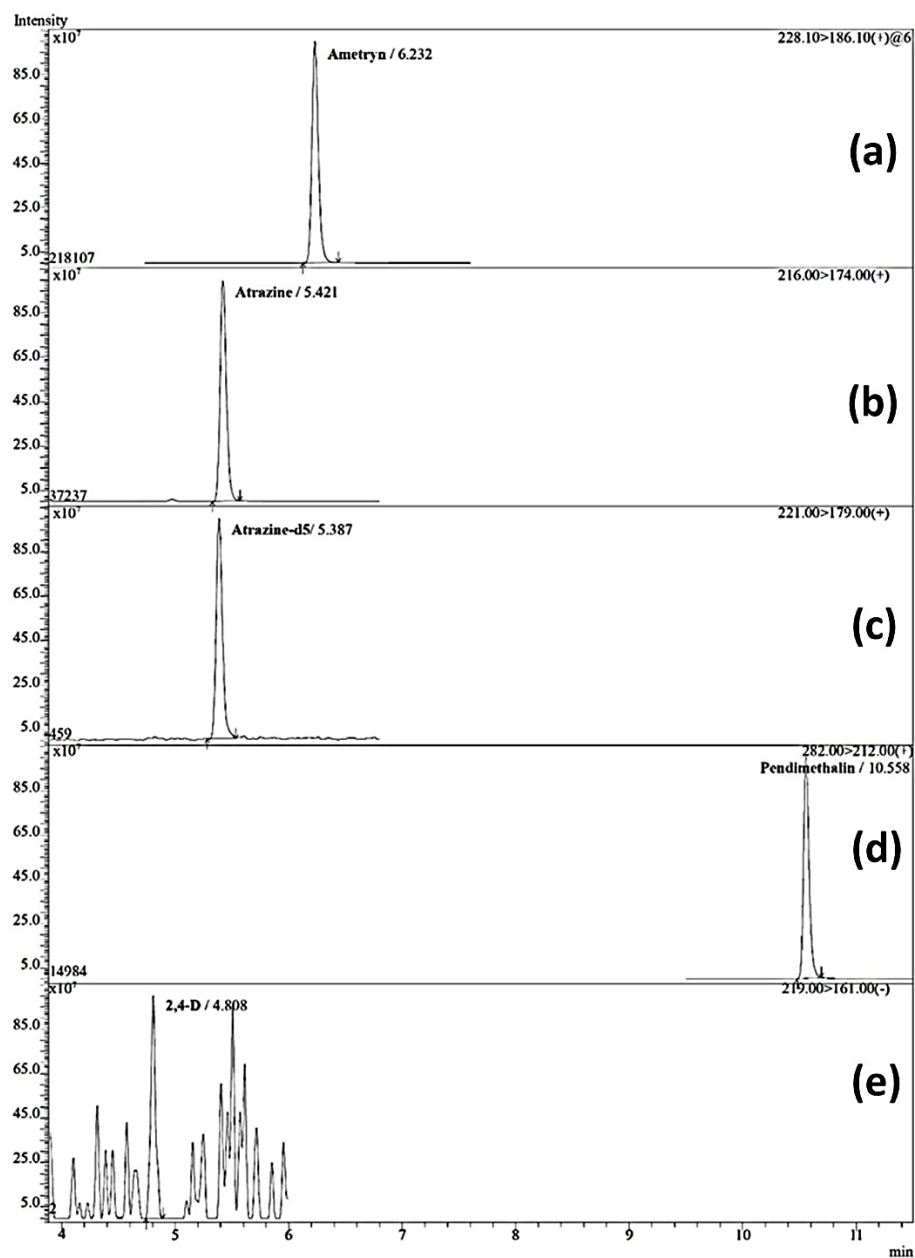


Fig. S1. Chromatograms of a sample collected from an applicator's household. (a) Ametryn monitored at m/z 228.10 > 186.10; (b) Atrazine monitored at m/z 216 > 174; (c) d5-labelled Atrazine monitored at m/z 221 > 179; (d) Pendimethalin monitored at m/z 282 > 212; (e) 2,4-D monitored at m/z 219 > 161.

Table S5. Concentrations of target compounds detected in each of the indoor air sample ($\mu\text{g m}^{-3}$) (n = 27)

| Ametryn | Atrazine | Pendimethalin | 2,4-D |
|----------------------------------|-----------------|----------------------|--------------|
| <i>Applicator households</i> | | | |
| 0.043 | 0.034 | 0.867 | ND |
| 0.510 | 0.232 | 2.202 | ND |
| 2.727 | 1.057 | 1.293 | 0.001 |
| 2.990 | 2.653 | 3.502 | ND |
| 0.141 | 0.127 | 0.250 | ND |
| 0.021 | 0.072 | 0.120 | ND |
| 0.006 | 0.005 | 0.010 | ND |
| 0.013 | 0.016 | 0.057 | ND |
| 0.022 | 0.016 | 0.052 | ND |
| 0.095 | 0.031 | 0.149 | ND |
| 0.002 | 0.011 | 0.021 | ND |
| 2.205 | 0.217 | 0.015 | 0.004 |
| 0.104 | 0.017 | 0.001 | 0.001 |
| 1.829 | 0.139 | 0.006 | 0.011 |
| 0.561 | 0.159 | 0.008 | 0.004 |
| <i>Non-applicator households</i> | | | |
| 0.014 | 0.006 | 0.032 | ND |
| 0.001 | 0.001 | 0.019 | ND |
| 0.003 | 0.017 | 0.026 | ND |
| 0.017 | 0.006 | 0.047 | ND |
| 0.065 | 0.030 | 0.102 | ND |
| 0.004 | 0.007 | 0.032 | ND |
| 0.006 | 0.004 | 0.111 | ND |
| 0.001 | 0.001 | 0.013 | ND |
| 0.732 | 0.097 | 0.007 | 0.003 |
| 0.473 | 0.056 | 0.002 | 0.002 |
| 0.342 | 0.029 | 0.001 | 0.004 |
| 0.636 | 0.093 | 0.005 | 0.005 |

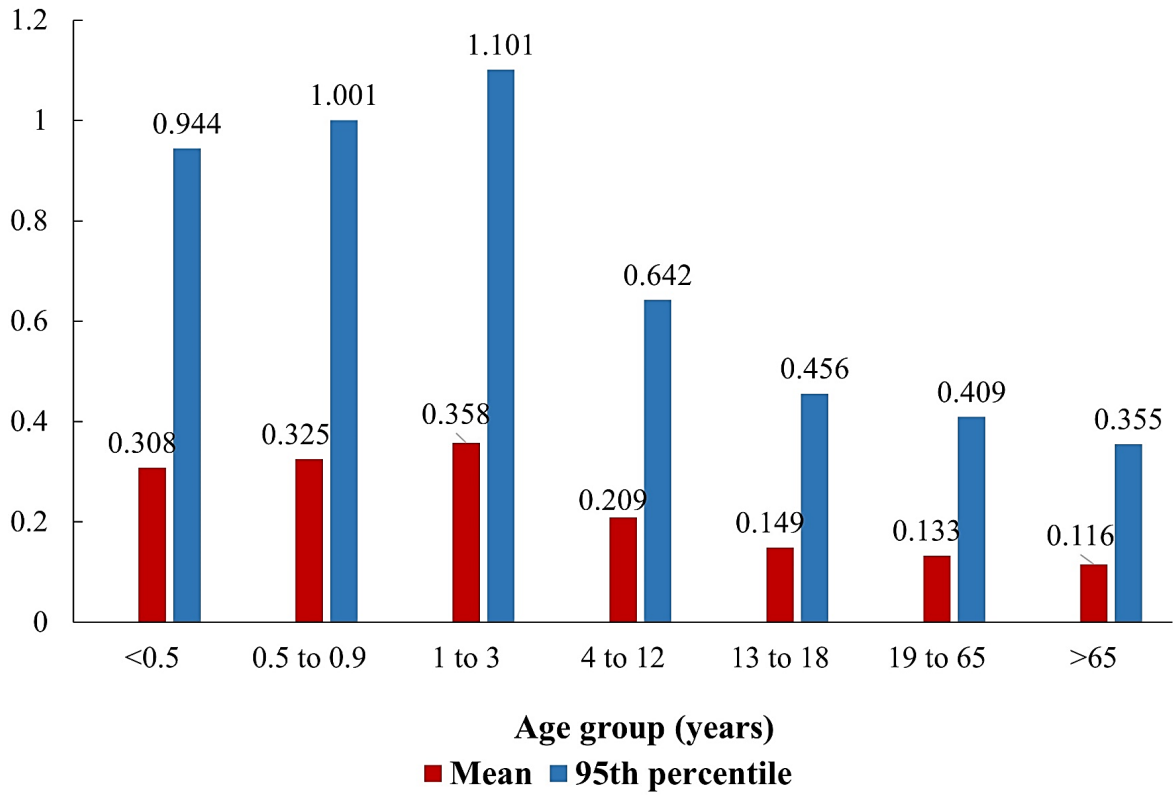


Fig. S2. Mean and 95th percentile HQ values of exposure to ametryn in applicator households.