

# **Supplemental Materials for the paper: Pesticide exposure in small streams in Germany**

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# 1 Data Cleaning

More than 30 datasets have been cleaned and homogenized separately, before combining into a common database. Cleaning steps comprised (Figure S1 gives a graphical overview).

1. Structure: Structure has been adjusted to the database structure.
2. Coordinates: Coordinates have been transformed to a common Coordinate Reference System (DHDN / 3-Grad Gauss-Krüger Zone 3 (EPSG:31467)) and duplicates merged.
3. Chemicals: Chemical names and identifiers have been unified using the webchem package (<https://github.com/ropensci/webchem>).
4. Identifiers: Unique identifiers have been assigned.
5. Units: All concentrations have been converted to  $\mu\text{g}/\text{L}$ . Values below limit of quantification were set to zero (and can be used to identify non-detects).
6. Other meta-data: meta-data has been standardised.
7. Temporal resolution: The temporal resolution of the database is 1 day. Data below this resolution has been aggregated by maximum.
8. Validity Checks: Simple rules for validity checks have been implemented (e.g. no negative concentrations).

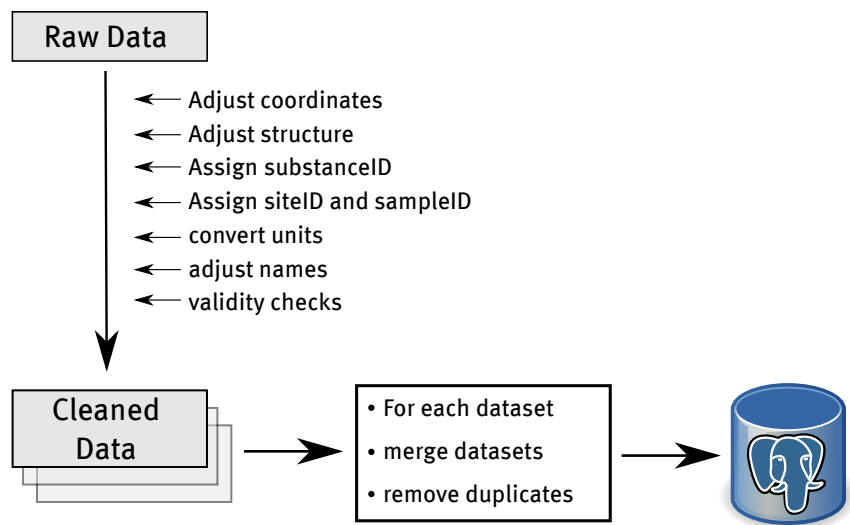


Figure S1: Overview on data cleaning steps. After cleaning data has been stored in a relational spatial PostgreSQL database.

## 2 Overview on compiled data

Table S1: Overview on chemical samples. Only data from running waters and grab sampling is shown. <sup>a</sup>: Abbreviations according to ISO 3166-2:DE. <sup>b</sup>: Including metabolites

| name                          | abbrv. <sup>a</sup> | Begin      | End        | No. sites | No.samples | No. pesticides <sup>b</sup> |
|-------------------------------|---------------------|------------|------------|-----------|------------|-----------------------------|
| Baden-Württemberg             | BW                  | 2005-03-10 | 2014-10-02 | 7         | 172        | 98                          |
| Bavaria                       | BY                  | 2006-04-19 | 2013-12-17 | 13        | 218        | 155                         |
| Hesse                         | HE                  | 2007-01-15 | 2014-12-18 | 65        | 2411       | 144                         |
| Mecklenburg Western Pomerania | MV                  | 2005-03-08 | 2014-12-17 | 130       | 1503       | 227                         |
| Lower Saxony                  | NI                  | 2014-03-24 | 2014-10-13 | 1         | 7          | 226                         |
| Northrhine-Westphalia         | NW                  | 2005-01-18 | 2015-01-22 | 1139      | 8536       | 198                         |
| Rhineland Palatinate          | RP                  | 2008-01-02 | 2013-12-18 | 7         | 341        | 236                         |
| Schleswig Holstein            | SH                  | 2005-04-26 | 2014-11-26 | 269       | 1380       | 180                         |
| Saarland                      | SL                  | 2005-01-03 | 2013-11-25 | 2         | 104        | 57                          |
| Saxony                        | SN                  | 2005-01-02 | 2013-12-18 | 606       | 9141       | 173                         |
| Saxony-Anhalt                 | ST                  | 2005-01-24 | 2015-03-19 | 30        | 416        | 88                          |
| Thuringia                     | TH                  | 2005-06-16 | 2014-12-08 | 32        | 514        | 63                          |
| Total                         |                     | 2005-01-02 | 2015-03-19 | 2301      | 24743      | 478                         |

Table S2: Overview on pesticides in the database. <sup>a</sup> Authorized in Germany (Source: BVL, 2015). <sup>b</sup> Authorized in the EU (Source: EU). <sup>c</sup> Regulatory Acceptable Concentration [ug/L] (Source: German EPA).

| Name         | CAS       | Group     | Auth.GER <sup>a</sup> | Auth.EU <sup>b</sup> | RAC <sup>c</sup> |
|--------------|-----------|-----------|-----------------------|----------------------|------------------|
| 1 Bromoxynil | 1689-84-5 | herbicide | x                     | x                    | 3.30             |
| 2 Ioxynil    | 1689-83-4 | herbicide | x                     |                      | 2.70             |

|    |  |             |             |   |   |        |
|----|--|-------------|-------------|---|---|--------|
| 3  | Bentazon   | 25057-89-0  | herbicide   | x | x | 710.00 |
| 4  | Methoxychlor   | 72-43-5     | insecticide |   |   |        |
| 5  | Thiometon  | 640-15-3    | insecticide |   |   |        |
| 6  | Quintozen  | 82-68-8     | fungicide   |   |   |        |
| 7  | Vinclozolin  | 50471-44-8  | fungicide   |   |   |        |
| 8  | Pyrazophos   | 13457-18-6  | fungicide   |   |   |        |
| 9  | Quinalphos   | 13593-03-8  | insecticide |   |   |        |
| 10 | Quinoxifen (5,7-dichloro-4-(p-fluorophenoxy)quinoline) | 124495-18-7 | fungicide   | x | x |        |
| 11 | 2,4-DB   | 94-82-6     | herbicide   |   | x |        |
| 12 | 2,4,5-T  | 93-76-5     | herbicide   |   |   |        |
| 13 | Alachlor   | 15972-60-8  | herbicide   |   |   |        |
| 14 | Ametryn  | 834-12-8    | herbicide   |   |   |        |
| 15 | Atrazin  | 1912-24-9   | herbicide   |   |   |        |
| 16 | Azinphos-ethyl   | 2642-71-9   | insecticide |   |   |        |
| 17 | Bromacil   | 314-40-9    | herbicide   |   |   |        |
| 18 | Chlorfenvinphos  | 470-90-6    | insecticide |   |   |        |
| 19 | Chloridazon  | 1698-60-8   | herbicide   | x | x | 56.00  |
| 20 | Chloroxuron  | 1982-47-4   | herbicide   |   |   |        |
| 21 | Chlorpyrifos   | 2921-88-2   | insecticide |   | x | 0.00   |
| 22 | Chlortoluron   | 15545-48-9  | herbicide   | x | x | 2.30   |
| 23 | Cyanazin   | 21725-46-2  | herbicide   |   |   |        |
| 24 | Cypermethrin   | 52315-07-8  | insecticide | x | x | 0.00   |
| 25 | Desethylatrazin  | 6190-65-4   | metabolite  |   |   |        |
| 26 | Desethylterbuthylazin                                  | 30125-63-4  | metabolite  |   |   |        |
| 27 | Desisopropylatrazin                                    | 1007-28-9   | metabolite  |   |   |        |
| 28 | Desmetryn  | 1014-69-3   | herbicide   |   |   |        |
| 29 | Diazinon   | 333-41-5    | insecticide |   |   |        |
| 30 | Dichlorprop  | 120-36-5    | herbicide   |   |   |        |
| 31 | Dichlorvos   | 62-73-7     | insecticide |   |   |        |
| 32 | Dicofol  | 115-32-2    | insecticide |   |   |        |
| 33 | Diffenican   | 83164-33-4  | herbicide   | x | x | 0.03   |
| 34 | Dimethoat  | 60-51-5     | insecticide | x | x | 4.00   |
| 35 | Disulfoton   | 298-04-4    | insecticide |   |   |        |
| 36 | Diuron   | 330-54-1    | herbicide   |   | x | 0.79   |
| 37 | Etrifos  | 38260-54-7  | insecticide |   |   |        |
| 38 | Fenitrothion   | 122-14-5    | insecticide |   |   |        |
| 39 | Fenoprop   | 93-72-1     | herbicide   |   |   |        |
| 40 | Fenpropimorph  | 67564-91-4  | fungicide   | x | x | 0.20   |
| 41 | Fenthion   | 55-38-9     | insecticide |   |   |        |
| 42 | Flurtamone   | 96525-23-4  | herbicide   | x | x | 0.99   |
| 43 | Hexazinon  | 51235-04-2  | herbicide   |   |   |        |
| 44 | Isoproturon  | 34123-59-6  | herbicide   | x | x | 1.30   |



|    |                      |             |             |   |   |        |
|----|----------------------|-------------|-------------|---|---|--------|
| 45 | Linuron              | 330-55-2    | herbicide   |   | x |        |
| 46 | Malathion            | 121-75-5    | insecticide |   | x |        |
| 47 | MCPA                 | 94-74-6     | herbicide   | x | x | 9.00   |
| 48 | MCPB                 | 94-81-5     | herbicide   |   | x |        |
| 49 | Mecoprop             | 93-65-2     | herbicide   |   | x | 160.00 |
| 50 | Metalaxyl            | 57837-19-1  | fungicide   |   | x | 46.00  |
| 51 | Metamitron           | 41394-05-2  | herbicide   | x | x | 38.00  |
| 52 | Metazachlor          | 67129-08-2  | herbicide   | x | x | 0.88   |
| 53 | Methabenzthiazuron   | 18691-97-9  | herbicide   |   |   |        |
| 54 | Methobromuron        | 3060-89-7   | herbicide   |   | x | 2.00   |
| 55 | Metolachlor          | 51218-45-2  | herbicide   |   |   |        |
| 56 | Metoxuron            | 19937-59-8  | herbicide   |   |   |        |
| 57 | Mevinphos            | 7786-34-7   | insecticide |   |   |        |
| 58 | Monolinuron          | 1746-81-2   | herbicide   |   |   |        |
| 59 | Napropamid           | 15299-99-7  | herbicide   | x | x | 6.70   |
| 60 | Oxadixyl             | 77732-09-3  | fungicide   |   |   |        |
| 61 | Parathion-ethyl      | 56-38-2     | insecticide |   |   |        |
| 62 | Parathion-methyl     | 298-00-0    | insecticide |   |   |        |
| 63 | Penconazol           | 66246-88-6  | fungicide   | x | x | 3.20   |
| 64 | Pendimethalin        | 40487-42-1  | herbicide   | x | x | 0.63   |
| 65 | Pirimicarb           | 23103-98-2  | insecticide | x | x | 0.09   |
| 66 | Prometryn            | 7287-19-6   | herbicide   |   |   |        |
| 67 | Propazin             | 139-40-2    | herbicide   |   |   |        |
| 68 | Propiconazol         | 60207-90-1  | fungicide   | x | x | 2.00   |
| 69 | Sebuthylazin         | 7286-69-3   | herbicide   |   |   |        |
| 70 | Simazin              | 122-34-9    | herbicide   |   |   |        |
| 71 | Tebuconazol          | 107534-96-3 | fungicide   | x | x | 0.58   |
| 72 | Terbutryn            | 886-50-0    | herbicide   |   |   |        |
| 73 | Terbuthylazin        | 5915-41-3   | herbicide   | x | x | 1.20   |
| 74 | Tolclofos-methyl     | 57018-04-9  | fungicide   | x | x |        |
| 75 | Triazophos           | 24017-47-8  | insecticide |   |   | 0.03   |
| 76 | Trifluralin          | 1582-09-8   | herbicide   |   |   |        |
| 77 | Dicamba              | 1918-00-9   | herbicide   | x | x | 180.00 |
| 78 | Propetamphos         | 31218-83-4  | insecticide |   |   |        |
| 79 | Aziprotryn           | 4658-28-0   | herbicide   |   |   |        |
| 80 | Norflurazon          | 27314-13-2  | herbicide   |   |   |        |
| 81 | Secbumeton           | 26259-45-0  | herbicide   |   |   |        |
| 82 | Tebutam              | 35256-85-0  | herbicide   |   |   |        |
| 83 | 2,4-D                | 94-75-7     | herbicide   | x | x | 1.10   |
| 84 | 4,6-Dinitro-o-Cresol | 534-52-1    | insecticide |   |   |        |
| 85 | Azinphos-methyl      | 86-50-0     | insecticide |   |   |        |
| 86 | Azoxystrobin         | 131860-33-8 | fungicide   | x | x | 0.55   |
| 87 | Carbofuran           | 1563-66-2   | insecticide |   |   |        |

|     |                      |             |             |   |   |         |
|-----|----------------------|-------------|-------------|---|---|---------|
| 88  | Epoxiconazol         | 133855-98-8 | fungicide   | x | x | 0.54    |
| 89  | Ethofumesat          | 26225-79-6  | herbicide   | x | x | 24.00   |
| 90  | Flufenacet           | 142459-58-3 | herbicide   | x | x | 2.40    |
| 91  | Lenacil              | 2164-08-1   | herbicide   | x | x | 0.65    |
| 92  | Metribuzin           | 21087-64-9  | herbicide   | x | x | 0.58    |
| 93  | Phenmedipham         | 13684-63-4  | herbicide   | x | x |         |
| 94  | Picolinafen          | 137641-05-5 | herbicide   | x | x | 0.04    |
| 95  | Propanil             | 709-98-8    | herbicide   |   |   |         |
| 96  | Dinoterb             | 1420-07-1   | herbicide   |   |   |         |
| 97  | Dinoseb              | 88-85-7     | herbicide   |   |   |         |
| 98  | Clodinafop           | 114420-56-3 | herbicide   | x | x |         |
| 99  | 2,6-Dichlorobenzamid | 2008-58-4   | metabolite  |   |   |         |
| 100 | Aclonifen            | 74070-46-5  | herbicide   | x | x | 1.06    |
| 101 | AMPA                 | 1066-51-9   | metabolite  |   |   |         |
| 102 | Atrazin, 2-Hydroxy   | 2163-68-0   | metabolite  |   |   |         |
| 103 | Benalaxyl            | 71626-11-4  | fungicide   | x | x | 20.00   |
| 104 | Bensulfuron-methyl   | 83055-99-6  | herbicide   |   | x |         |
| 105 | Bifenox              | 42576-02-3  | herbicide   | x | x |         |
| 106 | Boscalid             | 188425-85-6 | fungicide   | x | x | 12.50   |
| 107 | Carbendazim          | 10605-21-7  | fungicide   |   |   | 0.15    |
| 108 | Clomazon             | 81777-89-1  | herbicide   | x | x | 5.70    |
| 109 | Clopyralid           | 1702-17-6   | herbicide   | x | x | 1080.00 |
| 110 | Clothianidin         | 210880-92-5 | insecticide | x | x | 0.01    |
| 111 | Cyprodinil           | 121552-61-2 | fungicide   | x | x | 0.75    |
| 112 | Dimefuron            | 34205-21-5  | herbicide   |   |   | 0.83    |
| 113 | Dimethachlor         | 50563-36-5  | herbicide   | x | x | 3.50    |
| 114 | Endosulfan, alpha    | 959-98-8    | insecticide |   |   |         |
| 115 | Endosulfan, beta     | 33213-65-9  | insecticide |   |   |         |
| 116 | Fenhexamid           | 126833-17-8 | fungicide   | x | x | 10.10   |
| 117 | Fenpropidin          | 67306-00-7  | fungicide   | x | x |         |
| 118 | Fenuron              | 101-42-8    | herbicide   |   |   |         |
| 119 | Fluopicolide         | 239110-15-7 | fungicide   | x | x |         |
| 120 | Fluroxypyr           | 69377-81-7  | herbicide   | x | x | 16.00   |
| 121 | Flusilazol           | 85509-19-9  | fungicide   |   |   | 1.10    |
| 122 | Glufosinat           | 51276-47-2  | herbicide   | x | x |         |
| 123 | Glyphosate           | 1071-83-6   | herbicide   | x | x | 100.00  |
| 124 | Haloxypop            | 69806-34-4  | herbicide   |   |   |         |
| 125 | HCH, gamma (Lindan)  | 58-89-9     | insecticide |   |   |         |
| 126 | Imidacloprid         | 138261-41-3 | insecticide | x | x | 0.01    |
| 127 | Kresoxim-methyl      | 143390-89-0 | fungicide   | x | x | 1.00    |

|     |                             |             |             |   |   |        |
|-----|-----------------------------|-------------|-------------|---|---|--------|
| 128 | Metolachlorsäure            | 152019-73-3 | metabolite  |   |   |        |
| 129 | Metolachlorsulfonsäure      | 171118-09-5 | metabolite  |   |   |        |
| 130 | Nicosulfuron                | 111991-09-4 | herbicide   | x | x | 0.09   |
| 131 | Picoxystrobin               | 117428-22-5 | fungicide   | x | x | 0.60   |
| 132 | Prochloraz                  | 67747-09-5  | fungicide   | x | x | 5.00   |
| 133 | Prosulfocarb                | 52888-80-9  | herbicide   | x | x | 3.80   |
| 134 | Quinmerac                   | 90717-03-6  | herbicide   | x | x | 316.00 |
| 135 | Triadimenol                 | 55219-65-3  | fungicide   | x | x | 3.40   |
| 136 | Fluazifop                   | 69335-91-7  | herbicide   |   |   |        |
| 137 | Fenoxaprop                  | 95617-09-7  | herbicide   |   |   |        |
| 138 | Esfenvalerat                | 66230-04-4  | insecticide | x | x |        |
| 139 | Cyhalothrin                 | 91465-08-6  | insecticide | x | x |        |
|     | (Summe Isomere)             |             |             |   |   |        |
| 140 | Cyfluthrin                  | 68359-37-5  | insecticide |   |   |        |
|     | (Summe Iso-<br>mere)        |             |             |   |   |        |
| 141 | Acifluorfen                 | 50594-66-6  | herbicide   |   |   |        |
| 142 | Diclofop                    | 40843-25-2  | herbicide   |   | x |        |
| 143 | Flamprop                    | 58667-63-3  | herbicide   |   |   |        |
| 144 | Diflubenzuron               | 35367-38-5  | insecticide |   | x |        |
| 145 | Difenoconazol               | 119446-68-3 | fungicide   | x | x | 0.36   |
| 146 | Amidosulfuron               | 120923-37-7 | herbicide   | x | x |        |
| 147 | Triasulfuron                | 82097-50-5  | herbicide   | x | x |        |
| 148 | Triflursulfuron             | 135990-29-3 | herbicide   | x | x |        |
| 149 | Methidathion                | 950-37-8    | insecticide |   |   |        |
| 150 | Cyproconazol                | 94361-06-5  | fungicide   | x | x |        |
| 151 | Ethidimuron                 | 30043-49-3  | herbicide   |   |   |        |
| 152 | Monuron                     | 150-68-5    | herbicide   |   |   |        |
| 153 | Carbetamid                  | 16118-49-3  | herbicide   |   | x |        |
| 154 | Triallat                    | 2303-17-5   | herbicide   |   | x |        |
| 155 | Dichlobenil                 | 1194-65-6   | herbicide   |   |   |        |
| 156 | Endosulfansulfat            | 1031-07-8   | metabolite  |   |   |        |
| 157 | Flurochloridon              | 61213-25-0  | herbicide   |   | x |        |
| 158 | Triclopyr                   | 55335-06-3  | herbicide   | x | x |        |
| 159 | Fenoxycarb                  | 72490-01-8  | insecticide |   | x |        |
| 160 | Desmedipham                 | 13684-56-5  | herbicide   | x | x |        |
| 161 | Flumioxazin                 | 103361-09-7 | herbicide   | x | x |        |
| 162 | Fluroxypyr-<br>methylheptyl | 81406-37-3  | herbicide   |   |   |        |
| 163 | Metsulfuron-<br>methyl      | 74223-64-6  | herbicide   |   |   |        |
| 164 | Picloram                    | 1918-02-1   | herbicide   | x | x |        |
| 165 | Propaquizafop               | 111479-05-1 | herbicide   | x | x |        |
| 166 | Prosulfuron                 | 94125-34-5  | herbicide   | x | x |        |

|     |  |             |             |   |   |      |
|-----|--|-------------|-------------|---|---|------|
| 167 | Chlorsulfuron                            | 64902-72-3  | herbicide   |   |   |      |
| 168 | Primisulfuron-<br>methyl                 | 86209-51-0  | herbicide   |   |   |      |
| 169 | Desmethylisoproturon                     | 34123-57-4  | metabolite  |   |   |      |
| 170 | Desethyl-2-<br>hydroxyterbuthylazin      | 66753-06-8  | metabolite  |   |   |      |
| 171 | 1-(3,4-<br>Dichlorophenyl)urea           | 2327-02-8   | metabolite  |   |   |      |
| 172 | 1-(4-<br>Isopropylphenyl)urea            | 56046-17-4  | metabolite  |   |   |      |
| 173 | Terbumeton                               | 33693-04-8  | herbicide   |   |   |      |
| 174 | Permethrin                               | 52645-53-1  | insecticide |   |   |      |
| 175 | Mefenpyr-diethyl                         | 135591-00-3 | other       | x |   |      |
| 176 | Iodosulfuron-<br>methyl                  | 144550-06-1 | herbicide   |   |   |      |
| 177 | Desmethyldiuron                          | 3567-62-2   | metabolite  |   |   |      |
| 178 | Desethylsimazin                          | 6190-65-4   | metabolite  |   |   |      |
| 179 | Thiophenylsulfuron                       | 79277-67-1  | herbicide   | x | x |      |
| 180 | Benazolin                                | 3813-05-6   | herbicide   |   |   |      |
| 181 | Chloramben                               | 133-90-4    | herbicide   |   |   |      |
| 182 | Chlorfenac                               | 85-34-7     | herbicide   |   |   |      |
| 183 | Desethylsebutylazin                      | 37019-18-4  | metabolite  |   |   |      |
| 184 | Atraton                                  | 1610-17-9   | herbicide   |   |   |      |
| 185 | Terbutylazin-<br>Metabolit SYN<br>545666 |             | metabolite  |   |   |      |
| 186 | 2-<br>Hydroxydesethylatrazin             | 19988-24-0  | metabolite  |   |   |      |
| 187 | Terbutylazin-<br>Metabolit CGA<br>324007 | 309923-18-0 | metabolite  |   |   |      |
| 188 | Aldrin                                   | 309-00-2    | insecticide |   |   |      |
| 189 | Chlordan                                 | 57-74-9     | insecticide |   |   |      |
| 190 | Coumaphos                                | 56-72-4     | insecticide |   |   |      |
| 191 | Demeton-S                                | 126-75-0    | insecticide |   |   |      |
| 192 | Desphenyl-<br>Chloridazon                | 6339-19-1   | metabolite  |   |   |      |
| 193 | Dieldrin                                 | 60-57-1     | insecticide |   |   |      |
| 194 | Dimethomorph                             | 110488-70-5 | fungicide   | x | x | 5.60 |
| 195 | Dimoxystrobin                            | 149961-52-4 | fungicide   | x | x | 0.03 |
| 196 | Endrin                                   | 72-20-8     | insecticide |   |   |      |
| 197 | Heptachlor                               | 76-44-8     | insecticide |   |   |      |
| 198 | Heptachlorepoxyd                         | 1024-57-3   | metabolite  |   |   |      |
| 199 | Isodrin                                  | 465-73-6    | insecticide |   |   |      |

|     |                               |              |             |   |   |      |
|-----|-------------------------------|--------------|-------------|---|---|------|
| 200 | Omethoat                      | 1113-02-6    | insecticide |   |   |      |
| 201 | p,p-DDT                       | 50-29-3      | insecticide |   |   |      |
| 202 | Pethoxamid                    | 106700-29-2  | herbicide   | x | x | 1.77 |
| 203 | Pyraclostrobin                | 175013-18-0  | fungicide   | x | x |      |
| 204 | Pyrimethanil                  | 53112-28-0   | fungicide   | x | x | 8.00 |
| 205 | Spiroxamin                    | 118134-30-8  | fungicide   | x | x | 0.13 |
| 206 | Thiacloprid                   | 111988-49-9  | insecticide | x | x | 0.00 |
| 207 | Tolylfluamid                  | 731-27-1     | fungicide   |   |   |      |
| 208 | trans-Chlordan                | 5103-74-2    | insecticide |   |   |      |
| 209 | Tritosulfuron                 | 142469-14-5  | herbicide   | x | x |      |
| 210 | Methiocarb                    | 2032-65-7    | insecticide | x | x | 0.01 |
| 211 | Iprodion                      | 36734-19-7   | fungicide   | x | x |      |
| 212 | Anthranilsäureisopropyl-ester | 30891-89-0   | metabolite  |   |   |      |
| 213 | Tebufenozid                   | 112410-23-8  | insecticide | x | x |      |
| 214 | cis-Chlordan                  | 5103-71-9    | insecticide |   |   |      |
| 215 | Propham                       | 122-42-9     | herbicide   |   |   |      |
| 216 | Cycloxidim                    | 101205-02-1  | herbicide   | x | x |      |
| 217 | Bixafen                       | 581809-46-3  | fungicide   | x | x | 0.46 |
| 218 | Dimethenamid-P                | 163515-14-8  | herbicide   | x | x | 1.35 |
| 219 | Dithianon                     | 3347-22-6    | fungicide   | x | x | 0.78 |
| 220 | Fenoxaprop-p-ethyl            | 71283-80-2   | herbicide   |   |   |      |
| 221 | Isoxaflutole                  | 141112-29-0  | herbicide   | x | x |      |
| 222 | Prothioconazol                | 178928-70-6  | fungicide   | x | x | 1.71 |
| 223 | Fluchloralin                  | 33245-39-5   | herbicide   |   |   |      |
| 224 | Furalaxyl                     | 57646-30-7   | fungicide   |   |   |      |
| 225 | Methoprotryn                  | 841-06-5     | herbicide   |   |   |      |
| 226 | Furmecyclox                   | 60568-05-0   | fungicide   |   |   |      |
| 227 | Metamitron-Desamino           | 36993-94-9   | metabolite  |   |   |      |
| 228 | Orysastrobin                  | 248593-16-0  | fungicide   |   |   |      |
| 229 | Icaridinsäure                 |              | metabolite  |   |   |      |
| 230 | Desaminometribuzin            | 35045-02-4   | metabolite  |   |   |      |
| 231 | Fenoxaprop-p                  | 113158-40-0  | herbicide   | x | x |      |
| 232 | Aldicarb                      | 116-06-3     | insecticide |   |   |      |
| 233 | Bifenthrin                    | 82657-04-3   | insecticide |   | x |      |
| 234 | Demeton-S-methyl              | 919-86-8     | insecticide |   |   |      |
| 235 | Demeton-S-methylsulfon        | 17040-19-6   | insecticide |   |   |      |
| 236 | Dimethachlorsulfonsäure       |              | metabolite  |   |   |      |
| 237 | Dimethenamid                  | 87674-68-8   | herbicide   |   |   | 1.35 |
| 238 | Hexachlorbenzen               | 118-74-1     | fungicide   |   |   |      |
| 239 | Metazachlorsäure              | 1231244-60-2 | metabolite  |   |   |      |

|     |                             |             |             |   |   |        |
|-----|-----------------------------|-------------|-------------|---|---|--------|
| 240 | Metazachlorsulfonsäure      | 172960-62-2 | metabolite  |   |   |        |
| 241 | Methyldesphenyl-Chloridazon | 17254-80-7  | metabolite  |   |   |        |
| 242 | Mirex                       | 2385-85-5   | insecticide |   |   |        |
| 243 | o,p-DDE                     | 3424-82-6   | metabolite  |   |   |        |
| 244 | o,p-DDT                     | 789-02-6    | insecticide |   |   |        |
| 245 | Oxydemeton-methyl           | 301-12-2    | insecticide |   |   | 1.10   |
| 246 | p,p-DDD (p,p TDE)           | 72-54-8     | insecticide |   |   |        |
| 247 | Propamocarb                 | 24579-73-5  | fungicide   | x | x |        |
| 248 | Propoxur                    | 114-26-1    | insecticide |   |   |        |
| 249 | Propyzamid                  | 23950-58-5  | herbicide   | x | x | 34.00  |
| 250 | Thifensulfuron-methyl       | 79277-27-3  | herbicide   |   |   |        |
| 251 | Trichlorfon                 | 52-68-6     | insecticide |   |   |        |
| 252 | Sulcotrion                  | 99105-77-8  | herbicide   | x | x |        |
| 253 | Pyrifenox                   | 88283-41-4  | fungicide   |   |   |        |
| 254 | Rimsulfuron                 | 122931-48-0 | herbicide   | x | x | 0.46   |
| 255 | Oxamyl                      | 23135-22-0  | insecticide |   | x |        |
| 256 | Hexaconazol                 | 79983-71-4  | fungicide   |   |   |        |
| 257 | Tebufenpyrad                | 119168-77-3 | insecticide | x | x |        |
| 258 | Fenarimol                   | 60168-88-9  | fungicide   |   |   |        |
| 259 | Myclobutanil                | 88671-89-0  | fungicide   | x | x | 2.40   |
| 260 | Triadimefon                 | 43121-43-3  | fungicide   |   |   |        |
| 261 | Propachlor                  | 1918-16-7   | herbicide   |   |   |        |
| 262 | Fluazifop-butyl             | 69806-50-4  | herbicide   |   |   |        |
| 263 | Procymidon                  | 32809-16-8  | fungicide   |   |   |        |
| 264 | Fluometuron                 | 2164-17-2   | herbicide   |   | x |        |
| 265 | Bupirimat                   | 41483-43-6  | fungicide   |   | x |        |
| 266 | Mepanipirim                 | 110235-47-7 | fungicide   | x | x |        |
| 267 | Chlorthalonil-SA            |             | metabolite  |   |   |        |
| 268 | Dimethachlor-CA             |             | metabolite  |   |   |        |
| 269 | Chlorpropham                | 101-21-3    | herbicide   | x | x |        |
| 270 | Fluazifop-P                 | 83066-88-0  | herbicide   | x | x | 146.00 |
| 271 | Buturon                     | 3766-60-7   | herbicide   |   |   |        |
| 272 | Isophenphos                 | 25311-71-1  | insecticide |   |   |        |
| 273 | Telodrin                    | 297-78-9    | insecticide |   |   |        |
| 274 | Quizalofop-ethyl            | 76578-14-8  | herbicide   |   |   |        |
| 275 | Chlorpyrifos-methyl         | 5598-13-0   | insecticide |   | x |        |
| 276 | Ethirimol                   | 23947-60-6  | fungicide   |   |   |        |
| 277 | Nitrofen                    | 1836-75-5   | herbicide   |   |   |        |
| 278 | Betacypermethrin            | 65731-84-2  | insecticide |   | x |        |

|     |                            |             |             |   |   |      |
|-----|----------------------------|-------------|-------------|---|---|------|
| 279 | Pirimiphos-ethyl           | 23505-41-1  | insecticide |   |   |      |
| 280 | Pyrethrum                  | 8003-34-7   | insecticide | x | x | 0.01 |
| 281 | Pyridaben                  | 96489-71-3  | insecticide |   | x |      |
| 282 | Ethofenprox                | 80844-07-1  | insecticide | x | x |      |
| 283 | Fluquinconazole            | 136426-54-5 | fungicide   | x | x | 0.80 |
| 284 | Methamidophos              | 10265-92-6  | insecticide |   |   | 2.60 |
| 285 | Trifloxystrobin            | 141517-21-7 | fungicide   | x | x | 0.09 |
| 286 | Tefluthrin                 | 79538-32-2  | insecticide | x | x |      |
| 287 | Deltamethrin               | 52918-63-5  | insecticide | x | x |      |
| 288 | Dichlofluanid              | 1085-98-9   | fungicide   |   |   |      |
| 289 | Fludioxonil                | 131341-86-1 | fungicide   | x | x | 0.50 |
| 290 | Indoxacarb                 | 173584-44-6 | insecticide | x | x |      |
| 291 | Folpet                     | 133-07-3    | fungicide   | x | x |      |
| 292 | alpha-Cypermethrin         | 67375-30-8  | insecticide | x | x |      |
| 293 | Captan                     | 133-06-2    | fungicide   | x | x | 5.00 |
| 294 | Chlorthalonil              | 1897-45-6   | fungicide   | x | x |      |
| 295 | Fenamiphos                 | 22224-92-6  | insecticide |   | x |      |
| 296 | Acrinathrin                | 101007-06-1 | insecticide |   | x |      |
| 297 | 4-tert. Cy-clobutylhexanon | 98-53-3     | metabolite  |   |   |      |
| 298 | Avermectin B1a             | 71751-41-2  | insecticide | x | x |      |
| 299 | Cyazofamid                 | 120116-88-3 | fungicide   | x | x |      |
| 300 | Fluoxastrobin              | 361377-29-9 | fungicide   | x | x |      |
| 301 | Isoxaben                   | 82558-50-7  | herbicide   | x | x |      |
| 302 | Metaldehyd                 | 108-62-3    | other       | x | x |      |
| 303 | Metconazol                 | 125116-23-6 | fungicide   | x | x |      |
| 304 | Pencycuron                 | 66063-05-6  | fungicide   | x | x |      |
| 305 | Thiamethoxam               | 153719-23-4 | insecticide | x | x | 0.04 |
| 306 | tau-Fluvalinat             | 102851-06-9 | insecticide | x | x | 0.03 |
| 307 | Mesotrion                  | 104206-82-8 | herbicide   | x | x |      |
| 308 | Chlormequat                | 7003-89-6   | other       | x | x |      |
| 309 | Quizalofop                 | 76578-12-6  | herbicide   |   |   |      |
| 310 | Fluazinam                  | 79622-59-6  | fungicide   | x | x | 0.26 |
| 311 | Carfentrazone-ethyl        | 128639-02-1 | herbicide   | x | x | 0.31 |
| 312 | Cyflufenamid               | 180409-60-3 | fungicide   | x | x |      |
| 313 | Fenamidon                  | 161326-34-7 | fungicide   | x | x |      |
| 314 | Fosthiazat                 | 98886-44-3  | other       | x | x |      |
| 315 | Fuberidazol                | 3878-19-1   | fungicide   | x | x |      |
| 316 | Hexythiazox                | 78587-05-0  | insecticide | x | x |      |
| 317 | Mandipropamid              | 374726-62-2 | fungicide   | x | x | 7.60 |
| 318 | Metrafenon                 | 220899-03-6 | fungicide   | x | x |      |
| 319 | Proquinazid                | 189278-12-4 | fungicide   | x | x |      |

|     |                                |             |             |   |   |        |
|-----|--------------------------------|-------------|-------------|---|---|--------|
| 320 | Tetraconazol                   | 112281-77-3 | fungicide   | x | x |        |
| 321 | Zoxamid                        | 156052-68-5 | fungicide   | x | x |        |
| 322 | Iprovalicarb                   | 140923-17-7 | fungicide   | x | x | 189.00 |
| 323 | Acetamiprid                    | 135410-20-7 | insecticide | x | x | 0.24   |
| 324 | Fenpyroximat                   | 134098-61-6 | insecticide | x | x |        |
| 325 | Flazasulfuron                  | 104040-78-0 | herbicide   | x | x |        |
| 326 | Methoxyfenozyd                 | 161050-58-4 | insecticide | x | x |        |
| 327 | Spirodiclofen                  | 148477-71-8 | insecticide | x | x |        |
| 328 | Thiabendazol                   | 148-79-8    | fungicide   | x | x |        |
| 329 | Triticonazol                   | 131983-72-7 | fungicide   | x | x |        |
| 330 | Beflubutamid                   | 113614-08-7 | herbicide   | x | x |        |
| 331 | Iodosulfuron                   | 185119-76-0 | herbicide   | x | x | 0.08   |
| 332 | Metosulam                      | 139528-85-1 | herbicide   | x | x |        |
| 333 | Florasulam                     | 145701-23-1 | herbicide   | x | x |        |
| 334 | Famoxadone                     | 131807-57-3 | fungicide   | x | x |        |
| 335 | Thiophanat-methyl              | 23564-05-8  | fungicide   | x | x |        |
| 336 | Chlorantraniliprole            | 500008-45-7 | insecticide | x | x | 0.35   |
| 337 | Fenazaquin                     | 120928-09-8 | insecticide | x | x |        |
| 338 | Flupyrsulfuron                 | 150315-10-9 | herbicide   | x | x |        |
| 339 | Foramsulfuron                  | 173159-57-4 | herbicide   | x | x | 0.95   |
| 340 | Imazosulfuron                  | 122548-33-8 | herbicide   | x | x |        |
| 341 | Mesosulfuron                   | 400852-66-6 | herbicide   | x | x |        |
| 342 | Quinoclamín                    | 2797-51-5   | herbicide   | x | x |        |
| 343 | Sulfosulfuron                  | 141776-32-1 | herbicide   |   | x |        |
| 344 | Triazoxid                      | 72459-58-6  | fungicide   | x | x |        |
| 345 | Tribenuron-methyl              | 101200-48-0 | herbicide   |   |   |        |
| 346 | Ametoctradin                   | 865318-97-4 | fungicide   | x | x |        |
| 347 | Propoxycarbazone               | 145026-81-9 | herbicide   | x | x |        |
| 348 | Thiencarbazon-methyl           | 317815-83-1 | herbicide   | x | x |        |
| 349 | Flutolanil                     | 66332-96-5  | fungicide   | x | x |        |
| 350 | Clethodim                      | 99129-21-2  | herbicide   | x | x |        |
| 351 | Imazamox                       | 114311-32-9 | herbicide   | x | x |        |
| 352 | Pyroxsulam                     | 422556-08-9 | herbicide   | x | x |        |
| 353 | (E)-7-(Z)-9-Dodecadienylacetat | 55774-32-8  | other       | x | x |        |
| 354 | (Z)-9-Dodecenylacetat          | 16974-11-1  | other       | x | x |        |
| 355 | 1-Decanol                      | 112-30-1    | other       | x | x |        |
| 356 | 1-Methylcyclopropen            | 3100-04-7   | other       | x | x |        |
| 357 | Acequinocyl                    | 57960-19-7  | insecticide | x | x | 9.00   |



|     |                          |             |             |   |   |        |
|-----|--------------------------|-------------|-------------|---|---|--------|
| 358 | Aminopyralid             | 150114-71-9 | herbicide   | x | x |        |
| 359 | Amisulbrom               | 348635-87-0 | fungicide   | x | x |        |
| 360 | Azadirachtin<br>(Neem)   | 11141-17-6  | insecticide | x | x |        |
| 361 | Benthiavalicarb          | 413615-35-7 | fungicide   | x | x |        |
| 362 | Benzoessäure             | 65-85-0     | fungicide   | x | x |        |
| 363 | Bifenazate               | 149877-41-8 | insecticide | x | x |        |
| 364 | Bromadiolon              | 28772-56-7  | other       |   | x |        |
| 365 | Cinidon-ethyl            | 142891-20-1 | herbicide   |   |   |        |
| 366 | Clofentezin              | 74115-24-5  | insecticide |   | x |        |
| 367 | Codlemone<br>(Codlelure) | 33956-49-9  | other       | x | x |        |
| 368 | Cymoxanil                | 57966-95-7  | fungicide   | x | x | 4.40   |
| 369 | Daminozid                | 1596-84-5   | other       | x | x |        |
| 370 | Deiquat                  | 2764-72-9   | herbicide   | x | x |        |
| 371 | Dichlorprop-P            | 15165-67-0  | herbicide   | x | x |        |
| 372 | Difenacoum               | 56073-07-5  | other       |   | x |        |
| 373 | Dodin                    | 2439-10-3   | fungicide   | x | x | 5.33   |
| 374 | Flonicamid               | 158062-67-0 | insecticide | x | x | 310.00 |
| 375 | Fosetyl                  | 15845-66-6  | fungicide   | x | x |        |
| 376 | gamma-<br>Cyhalothrin    | 76703-62-3  | insecticide | x | x |        |
| 377 | Haloxypop-P              | 95977-29-0  | herbicide   | x | x |        |
| 378 | Hymexazol                | 10004-44-1  | fungicide   | x | x |        |
| 379 | Imazalil                 | 35554-44-0  | fungicide   | x | x |        |
| 380 | Mancozeb                 | 8018-01-7   | fungicide   | x | x | 0.22   |
| 381 | Maneb                    | 12427-38-2  | fungicide   | x | x |        |
| 382 | Mepiquat                 | 15302-91-7  | other       | x | x |        |
| 383 | Metaflumizone            | 139968-49-3 | insecticide | x | x |        |
| 384 | Metalaxyl-M              | 70630-17-0  | fungicide   | x | x | 46.00  |
| 385 | Metiram                  | 9006-42-2   | fungicide   | x | x |        |
| 386 | Milbemectin              | 51596-11-3  | insecticide | x | x |        |
| 387 | Paclobutrazol            | 76738-62-0  | other       | x | x |        |
| 388 | Pelargonsäure            | 112-05-0    | herbicide   | x | x |        |
| 389 | Penoxsulam               | 219714-96-2 | herbicide   | x | x |        |
| 390 | Pinoxaden                | 243973-20-8 | herbicide   | x |   |        |
| 391 | Pirimiphos-<br>methyl    | 29232-93-7  | insecticide | x | x |        |
| 392 | Prohexadion              | 88805-35-0  | other       | x | x |        |
| 393 | Pymetrozin               | 123312-89-0 | insecticide | x | x |        |
| 394 | Pyraflufen               | 129630-17-7 | herbicide   | x | x |        |
| 395 | Pyridat                  | 55512-33-9  | herbicide   | x | x |        |
| 396 | Silthiofam               | 175217-20-6 | fungicide   | x | x |        |
| 397 | Spinosad                 | 168316-95-8 | insecticide | x | x | 0.06   |

|     |                          |             |             |   |   |      |
|-----|--------------------------|-------------|-------------|---|---|------|
| 398 | Sulfurylfluorid          | 2699-79-8   | insecticide | x | x |      |
| 399 | Tembotrione              | 335104-84-2 | herbicide   | x | x |      |
| 400 | Tepraloxydim             | 149979-41-9 | herbicide   | x | x |      |
| 401 | Thiram                   | 137-26-8    | fungicide   | x | x | 0.11 |
| 402 | Topramezone              | 210631-68-8 | herbicide   | x |   | 0.90 |
| 403 | Trinexapac-ethyl         | 95266-40-3  | other       | x | x |      |
| 404 | Warfarin                 | 81-81-2     | other       |   |   |      |
| 405 | 1,3-cis-Dichlorpropen    | 10061-01-5  | other       |   |   |      |
| 406 | 1,3-trans-Dichlorpropen  | 10061-02-6  | other       |   |   |      |
| 407 | Bromocyclen              | 1715-40-8   | insecticide |   |   |      |
| 408 | Heptenophos              | 23560-59-0  | insecticide |   |   |      |
| 409 | p,p-DDE                  | 72-55-9     | metabolite  |   |   |      |
| 410 | Clodinafop-propargyl     | 105512-06-9 | herbicide   |   |   |      |
| 411 | Neburon                  | 555-37-3    | herbicide   |   |   |      |
| 412 | Metalaxyl-CA2            | 104390-56-9 | metabolite  |   |   |      |
| 413 | Thiacloprid-SA           |             | metabolite  |   |   |      |
| 414 | Karbutylat               | 4849-32-5   | herbicide   |   |   |      |
| 415 | Crimidin                 | 535-89-7    | other       |   |   |      |
| 416 | Chlorbromuron            | 13360-45-7  | herbicide   |   |   |      |
| 417 | oxi-Chlordan             | 27304-13-8  | metabolite  |   |   |      |
| 418 | Nitenpyram               | 120738-89-8 | insecticide |   |   |      |
| 419 | 2,4-Dichlorphenol        | 120-83-2    | metabolite  |   |   |      |
| 420 | 2,4,6-Trichlorphenol     | 88-06-2     | metabolite  |   |   |      |
| 421 | Demeton-O                | 298-03-3    | insecticide |   |   |      |
| 422 | Chlorfluazuron           | 71422-67-8  | insecticide |   |   |      |
| 423 | Cyromazin                | 66215-27-8  | insecticide |   | x |      |
| 424 | Carboxin                 | 5234-68-4   | fungicide   |   | x |      |
| 425 | Dinotefuran              | 165252-70-0 | insecticide |   |   |      |
| 426 | Prothioconazol-desthio   | 120983-64-4 | metabolite  |   |   |      |
| 427 | Cyclanilide              | 113136-77-9 | other       |   |   |      |
| 428 | Profoxydim               | 139001-49-3 | herbicide   |   | x |      |
| 429 | Fluopyram                | 658066-35-4 | fungicide   | x | x | 5.12 |
| 430 | Dimethenamid-CA          |             | metabolite  |   |   |      |
| 431 | Dimethenamid-SA          |             | metabolite  |   |   |      |
| 432 | Flufenacet-SA            |             | metabolite  |   |   |      |
| 433 | Metalaxyl-CA             | 75596-99-5  | metabolite  |   |   |      |
| 434 | Metazachlordicarbonsäure |             | metabolite  |   |   |      |

|     |                       |             |             |   |   |      |
|-----|-----------------------|-------------|-------------|---|---|------|
| 435 | Saflufenacil          | 372137-35-4 | herbicide   |   |   |      |
| 436 | Valifenalate          | 283159-90-0 | fungicide   | x | x |      |
| 437 | Fluxapyroxad          | 907204-31-3 | fungicide   | x | x |      |
| 438 | Isopyrazam            | 881685-58-1 | fungicide   | x | x |      |
| 439 | Penflufen             | 494793-67-8 | fungicide   |   | x |      |
| 440 | Fipronil              | 120068-37-3 | insecticide |   | x | 0.00 |
| 441 | Hexachlorophen        | 70-30-4     | other       |   |   |      |
| 442 | Flutriafol            | 76674-21-0  | fungicide   |   | x |      |
| 443 | Kresoximsäure         |             | metabolite  |   |   |      |
| 444 | Metsulfuron           | 79510-48-8  | herbicide   | x | x |      |
| 445 | Triflumuron           | 64628-44-0  | insecticide |   | x |      |
| 446 | Cycloat               | 1134-23-2   | herbicide   |   |   |      |
| 447 | Diniconazol           | 83657-24-3  | fungicide   |   |   |      |
| 448 | Hexaflumuron          | 86479-06-3  | insecticide |   |   |      |
| 449 | Oxadiazon             | 19666-30-9  | herbicide   |   | x |      |
| 450 | Etaconazol            | 60207-93-4  | fungicide   |   |   |      |
| 451 | Flufenoxuron          | 101463-69-8 | insecticide |   |   |      |
| 452 | Mepronil              | 55814-41-0  | fungicide   |   |   |      |
| 453 | Methomyl              | 16752-77-5  | insecticide |   | x |      |
| 454 | Pirimicarb-desmethyl  | 30614-22-3  | metabolite  |   |   |      |
| 455 | Spiromesifen          | 283594-90-1 | insecticide |   | x |      |
| 456 | Triflumizol           | 99387-89-0  | fungicide   |   | x |      |
| 457 | Triforin              | 26644-46-2  | fungicide   |   |   |      |
| 458 | Teflubenzuron         | 83121-18-0  | insecticide |   | x |      |
| 459 | Azoxystrobin-CA       |             | metabolite  |   |   |      |
| 460 | Trifloxystrobin-CA2   |             | metabolite  |   |   |      |
| 461 | Imazapic              | 104098-48-8 | herbicide   |   |   |      |
| 462 | Imazaquin             | 81335-37-7  | herbicide   |   | x |      |
| 463 | Imazethapyr           | 81335-77-5  | herbicide   |   |   |      |
| 464 | Meptyldinocap         | 131-72-6    | fungicide   |   | x |      |
| 465 | Tralkoxydim           | 87820-88-0  | herbicide   |   | x |      |
| 466 | Fluazifop-P-butyl     | 79241-46-6  | herbicide   |   |   | 7.70 |
| 467 | Phoxim                | 14816-18-3  | insecticide |   |   | 0.01 |
| 468 | Haloxifop-ethoxyethyl | 87237-48-7  | herbicide   |   |   |      |
| 469 | Cloquintocet-mexyl    | 99607-70-2  | other       |   | x |      |
| 470 | 3-Hydroxy Carbofuran  | 16655-82-6  | metabolite  |   |   |      |
| 471 | Acetochlor            | 34256-82-1  | herbicide   |   |   |      |
| 472 | Acetochlorsäure       | 194992-44-4 | metabolite  |   |   |      |
| 473 | Acetochlorsulfonsäure | 187022-11-3 | metabolite  |   |   |      |

|     |                            |             |            |   |   |
|-----|----------------------------|-------------|------------|---|---|
| 474 | Dimethachlorsäure          |             | metabolite |   |   |
| 475 | Dimethenamidsulfonsäure    |             | metabolite |   |   |
| 476 | Simazin, 2-Hydroxy         | 2599-11-3   | metabolite |   |   |
| 477 | Tribenuron                 | 106040-48-6 | herbicide  | x | x |
| 478 | Iodosulfuron-methyl-sodium | 144550-36-7 | herbicide  |   |   |

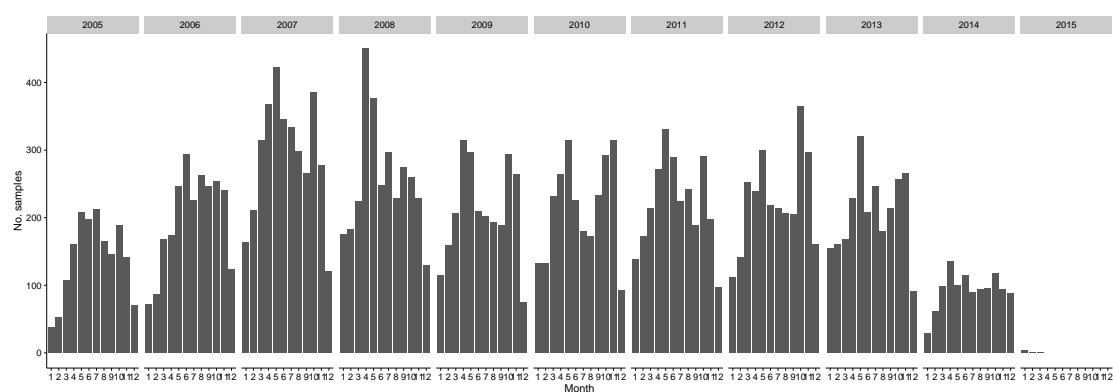


Figure S2: Number of sampling occasions per year and month.

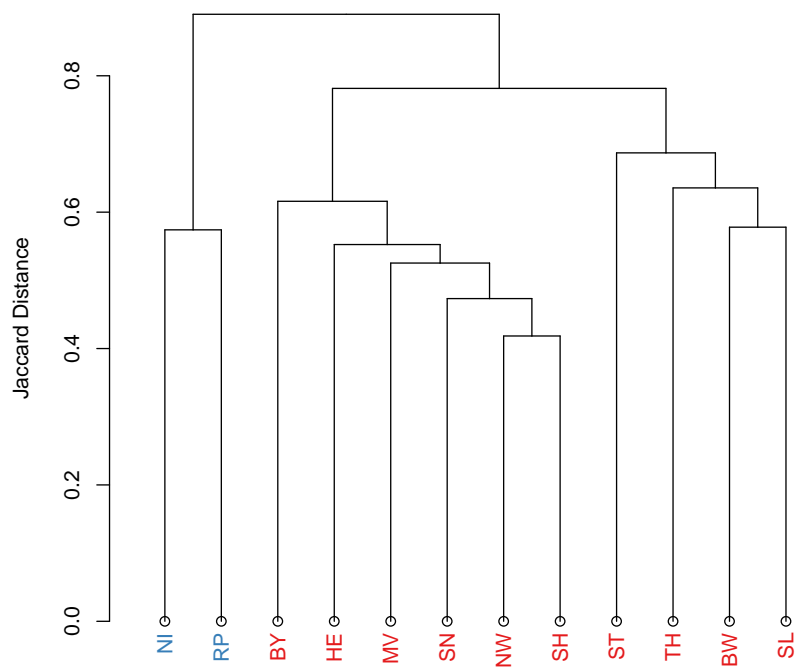


Figure S3: Complete Linkage Cluster Dendrogram of Jaccard Similarity of analysed compound spectra between federal states. Abbreviations of state names according to ISO 3166-2:DE.

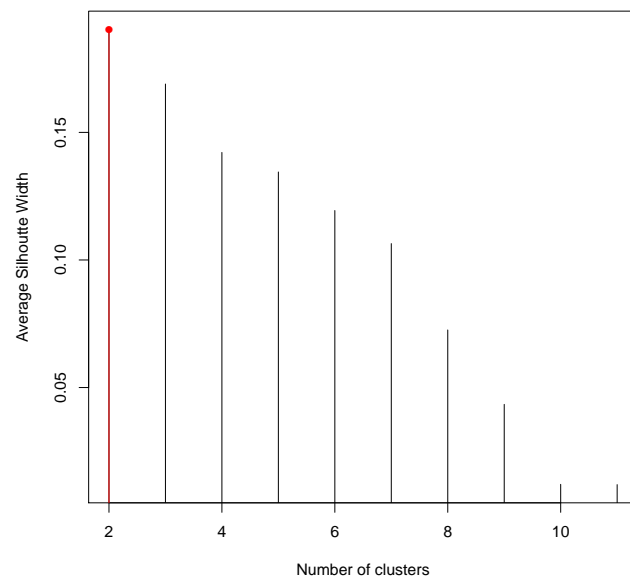


Figure S4: Average silhouette width for different cluster sizes. Two clusters showed maximum silhouette width.

### 3 Thresholds for agricultural land use and catchment size

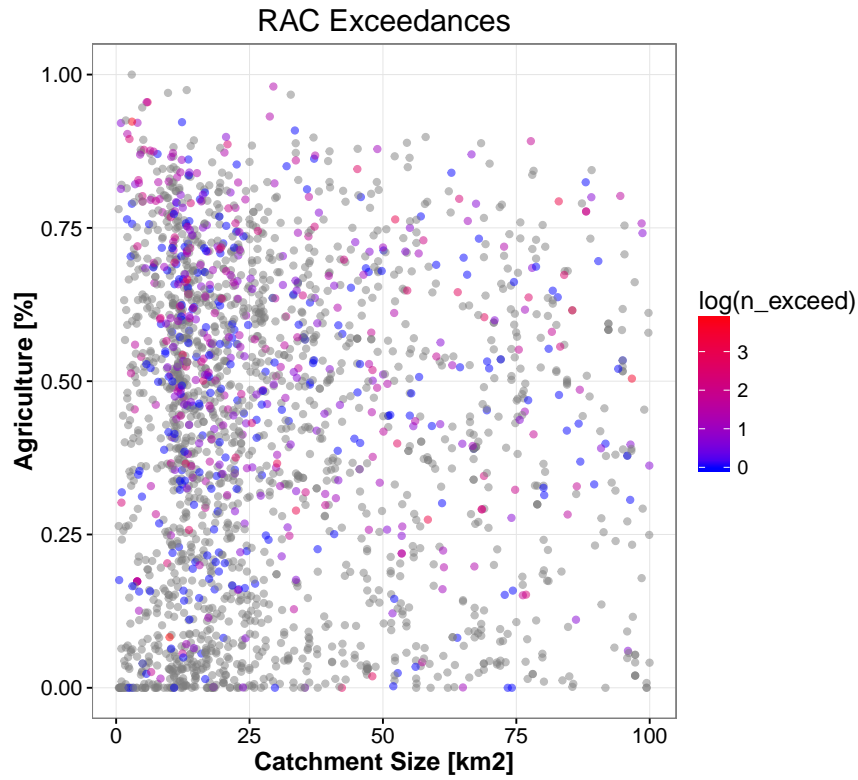


Figure S5: Raw data used for the model in equation 2 and Figure 3 of the main article. Color codes the number of RAC exceedances (on a log-scale). Grey points denote sites without any exceedance.

## 4 Effect of precipitation and season on RQ

Table S3: 23 pesticides for which we modelled the relationship with precipitation and seasonality. Order is the same as in Figure 5 of the main text. See Table S4 for model coefficients.

|    | Name          | CAS         | Group       | %>LOQ | no. > LOQ | total no. |
|----|---------------|-------------|-------------|-------|-----------|-----------|
| 1  | Azoxystrobin  | 131860-33-8 | fungicide   | 9.58  | 644       | 6723      |
| 2  | Bentazon      | 25057-89-0  | herbicide   | 19.43 | 2313      | 11905     |
| 3  | Boscalid      | 188425-85-6 | fungicide   | 23.00 | 2175      | 9455      |
| 4  | Carbendazim   | 10605-21-7  | fungicide   | 16.10 | 582       | 3615      |
| 5  | Chlorpyrifos  | 2921-88-2   | insecticide | 6.17  | 865       | 14026     |
| 6  | Clothianidin  | 210880-92-5 | insecticide | 6.30  | 141       | 2237      |
| 7  | Diffufenican  | 83164-33-4  | herbicide   | 12.63 | 1867      | 14784     |
| 8  | Dimethenamid  | 87674-68-8  | herbicide   | 6.14  | 563       | 9168      |
| 9  | Dimoxystrobin | 149961-52-4 | fungicide   | 6.83  | 216       | 3164      |
| 10 | Diuron        | 330-54-1    | herbicide   | 12.07 | 2138      | 17708     |
| 11 | Ethofumesat   | 26225-79-6  | herbicide   | 5.10  | 998       | 19552     |
| 12 | Flufenacet    | 142459-58-3 | herbicide   | 5.97  | 772       | 12923     |
| 13 | Glyphosate    | 1071-83-6   | herbicide   | 40.73 | 1389      | 3410      |
| 14 | Imidacloprid  | 138261-41-3 | insecticide | 5.88  | 176       | 2992      |
| 15 | Isoproturon   | 34123-59-6  | herbicide   | 21.84 | 3984      | 18239     |
| 16 | MCPA          | 94-74-6     | herbicide   | 12.81 | 1567      | 12237     |
| 17 | Mecoprop      | 93-65-2     | herbicide   | 12.21 | 1463      | 11984     |
| 18 | Metazachlor   | 67129-08-2  | herbicide   | 9.23  | 1930      | 20907     |
| 19 | Nicosulfuron  | 111991-09-4 | herbicide   | 5.33  | 263       | 4934      |
| 20 | Propiconazol  | 60207-90-1  | fungicide   | 5.67  | 772       | 13622     |
| 21 | Quinmerac     | 90717-03-6  | herbicide   | 13.46 | 939       | 6974      |
| 22 | Tebuconazol   | 107534-96-3 | fungicide   | 6.08  | 968       | 15924     |
| 23 | Terbuthylazin | 5915-41-3   | herbicide   | 14.59 | 3142      | 21540     |

Table S4: Coefficients and CI from per compound models. Bold values denote coefficients where the CI for precipitation encompasses zero. Coefficients are on the link scale (log for  $\mu$  and logit for  $\nu$ ).

| Compound | effect | $\log precip_0$ | $\log precip_{-1}$ | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|----------|--------|-----------------|--------------------|-----------|-----------|-----------|-----------|
|----------|--------|-----------------|--------------------|-----------|-----------|-----------|-----------|



|    |               |       |                                 |                                 |                          |                          |                          |                          |
|----|---------------|-------|---------------------------------|---------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1  | Azoxystrobin  | $\mu$ | <b>0.23</b><br>(0.15 - 0.31)    | 0.04<br>(-0.03 - 0.12)          | -3.39<br>(-3.56 - -3.22) | -3.02<br>(-3.14 - -2.89) | -3.16<br>(-3.29 - -3.03) | -3.47<br>(-3.63 - -3.3)  |
| 2  | Bentazon      | $\mu$ | -0.03<br>(-0.07 - 0)            | 0.02<br>(-0.02 - 0.05)          | -9.74<br>(-9.81 - -9.67) | -9.25<br>(-9.31 - -9.2)  | -9.42<br>(-9.48 - -9.36) | -9.74<br>(-9.81 - -9.68) |
| 3  | Boscalid      | $\mu$ | <b>0.06</b><br>(0.02 - 0.1)     | <b>0.1</b><br>(0.06 - 0.13)     | -6.72<br>(-6.79 - -6.64) | -6.42<br>(-6.49 - -6.36) | -6.51<br>(-6.58 - -6.45) | -6.58<br>(-6.65 - -6.5)  |
| 4  | Carbendazim   | $\mu$ | <b>-0.1</b><br>(-0.16 - -0.03)  | <b>0.16</b><br>(0.09 - 0.22)    | -2.42<br>(-2.58 - -2.27) | -1.95<br>(-2.05 - -1.84) | -2.11<br>(-2.22 - -2)    | -2.32<br>(-2.46 - -2.18) |
| 5  | Chlorpyrifos  | $\mu$ | <b>0.08</b><br>(0.04 - 0.13)    | -0.03<br>(-0.08 - 0.01)         | 0.95<br>(0.88 - 1.03)    | 1.1<br>(1.03 - 1.17)     | 1<br>(0.93 - 1.08)       | 1.05<br>(0.96 - 1.14)    |
| 6  | Clothianidin  | $\mu$ | 0.08<br>(-0.04 - 0.19)          | -0.1<br>(-0.21 - 0.02)          | 0.94<br>(0.77 - 1.12)    | 0.67<br>(0.49 - 0.84)    | 1.02<br>(0.8 - 1.25)     | 1.55<br>(1.32 - 1.78)    |
| 7  | Diflufenican  | $\mu$ | -0.02<br>(-0.06 - 0.02)         | <b>0.05</b><br>(0.02 - 0.09)    | -0.56<br>(-0.62 - -0.5)  | -1.01<br>(-1.07 - -0.94) | -1.08<br>(-1.16 - -1)    | -0.71<br>(-0.77 - -0.65) |
| 8  | Dimethenamid  | $\mu$ | <b>-0.1</b><br>(-0.17 - -0.03)  | 0.05<br>(-0.01 - 0.12)          | -4.01<br>(-4.16 - -3.86) | -3.79<br>(-3.89 - -3.68) | -3.72<br>(-3.84 - -3.61) | -4.02<br>(-4.14 - -3.9)  |
| 9  | Dimoxystrobin | $\mu$ | <b>0.35</b><br>(0.2 - 0.5)      | 0.02<br>(-0.15 - 0.19)          | -1.17<br>(-1.44 - -0.89) | -0.42<br>(-0.64 - -0.2)  | -0.07<br>(-0.39 - 0.25)  | -0.02<br>(-0.35 - 0.31)  |
| 10 | Diuron        | $\mu$ | 0<br>(-0.03 - 0.03)             | <b>0.07</b><br>(0.04 - 0.1)     | -2.72<br>(-2.83 - -2.61) | -2.43<br>(-2.47 - -2.39) | -2.48<br>(-2.53 - -2.44) | -2.64<br>(-2.71 - -2.58) |
| 11 | Ethofumesat   | $\mu$ | <b>0.12</b><br>(0.06 - 0.17)    | 0.01<br>(-0.05 - 0.06)          | -6.11<br>(-6.27 - -5.96) | -5.49<br>(-5.56 - -5.42) | -6.18<br>(-6.29 - -6.08) | -6.1<br>(-6.24 - -5.95)  |
| 12 | Flufenacet    | $\mu$ | 0.03<br>(-0.02 - 0.08)          | <b>0.05</b><br>(0.01 - 0.1)     | -3.71<br>(-3.79 - -3.62) | -3.7<br>(-3.81 - -3.59)  | -3.29<br>(-3.44 - -3.15) | -3.63<br>(-3.68 - -3.57) |
| 13 | Glyphosate    | $\mu$ | -0.04<br>(-0.09 - 0.01)         | <b>0.14</b><br>(0.09 - 0.19)    | -6.3<br>(-6.46 - -6.13)  | -6.08<br>(-6.16 - -6)    | -5.73<br>(-5.8 - -5.66)  | -6.11<br>(-6.21 - -6.01) |
| 14 | Imidacloprid  | $\mu$ | 0<br>(-0.08 - 0.09)             | -0.01<br>(-0.09 - 0.07)         | 0.61<br>(0.33 - 0.88)    | 1.15<br>(1.02 - 1.27)    | 1.4<br>(1.28 - 1.53)     | 1.24<br>(1.06 - 1.42)    |
| 15 | Isoproturon   | $\mu$ | 0.02<br>(-0.02 - 0.05)          | <b>0.21</b><br>(0.17 - 0.24)    | -3.29<br>(-3.37 - -3.22) | -3.01<br>(-3.06 - -2.96) | -3.43<br>(-3.5 - -3.35)  | -2.79<br>(-2.84 - -2.73) |
| 16 | MCPA          | $\mu$ | 0.04<br>(-0.01 - 0.09)          | <b>0.09</b><br>(0.04 - 0.14)    | -5.07<br>(-5.27 - -4.87) | -4.25<br>(-4.32 - -4.19) | -4.48<br>(-4.57 - -4.4)  | -4.7<br>(-4.81 - -4.58)  |
| 17 | Mecoprop      | $\mu$ | 0.04<br>(-0.01 - 0.09)          | <b>0.05</b><br>(0.01 - 0.1)     | -8.36<br>(-8.49 - -8.22) | -7.59<br>(-7.65 - -7.52) | -7.77<br>(-7.85 - -7.69) | -8.07<br>(-8.18 - -7.97) |
| 18 | Metazachlor   | $\mu$ | <b>-0.07</b><br>(-0.12 - -0.02) | <b>0.09</b><br>(0.04 - 0.13)    | -2.97<br>(-3.06 - -2.88) | -2.94<br>(-3.04 - -2.85) | -2.21<br>(-2.28 - -2.14) | -2.77<br>(-2.84 - -2.7)  |
| 19 | Nicosulfuron  | $\mu$ | <b>0.23</b><br>(0.12 - 0.34)    | <b>-0.28</b><br>(-0.39 - -0.18) | -0.98<br>(-1.22 - -0.74) | -0.2<br>(-0.36 - -0.03)  | -0.07<br>(-0.25 - 0.11)  | -0.97<br>(-1.16 - -0.78) |
| 20 | Propiconazol  | $\mu$ | <b>0.08</b><br>(0.02 - 0.14)    | 0.01<br>(-0.05 - 0.07)          | -3.99<br>(-4.15 - -3.83) | -3.63<br>(-3.71 - -3.55) | -3.82<br>(-3.91 - -3.72) | -3.63<br>(-3.74 - -3.53) |
| 21 | Quinmerac     | $\mu$ | 0.02<br>(-0.05 - 0.09)          | 0.05<br>(-0.01 - 0.12)          | -9.08<br>(-9.19 - -8.96) | -9.12<br>(-9.24 - -9)    | -8.46<br>(-8.59 - -8.33) | -8.64<br>(-8.72 - -8.55) |
| 22 | Tebuconazol   | $\mu$ | -0.01<br>(-0.06 - 0.03)         | <b>0.09</b><br>(0.04 - 0.14)    | -2.17<br>(-2.28 - -2.06) | -1.93<br>(-2 - -1.86)    | -2.2<br>(-2.28 - -2.11)  | -2.15<br>(-2.24 - -2.06) |
| 23 | Terbuthylazin | $\mu$ | <b>0.09</b><br>(0.06 - 0.13)    | <b>0.11</b><br>(0.08 - 0.15)    | -3.65<br>(-3.73 - -3.56) | -2.78<br>(-2.84 - -2.73) | -3.25<br>(-3.3 - -3.19)  | -3.52<br>(-3.59 - -3.44) |
| 24 | Azoxystrobin  | $\nu$ | 0<br>(-0.13 - 0.13)             | <b>0.24</b><br>(0.11 - 0.37)    | -3.5<br>(-3.76 - -3.25)  | -2.33<br>(-2.54 - -2.13) | -2.14<br>(-2.36 - -1.92) | -3.2<br>(-3.45 - -2.95)  |
| 25 | Bentazon      | $\nu$ | 0<br>(-0.08 - 0.08)             | 0.05<br>(-0.03 - 0.13)          | -2.26<br>(-2.44 - -2.09) | -1.53<br>(-1.65 - -1.4)  | -1.88<br>(-2.02 - -1.74) | -2.25<br>(-2.4 - -2.11)  |
| 26 | Boscalid      | $\nu$ | -0.01<br>(-0.1 - 0.08)          | <b>0.45</b><br>(0.37 - 0.54)    | -1.99<br>(-2.16 - -1.82) | -1.22<br>(-1.36 - -1.07) | -1.24<br>(-1.38 - -1.09) | -1.81<br>(-1.96 - -1.65) |
| 27 | Carbendazim   | $\nu$ | 0.09<br>(-0.04 - 0.22)          | <b>0.19</b><br>(0.06 - 0.32)    | -2.72<br>(-3 - -2.44)    | -1.49<br>(-1.69 - -1.28) | -1.26<br>(-1.48 - -1.04) | -2.31<br>(-2.56 - -2.06) |
| 28 | Chlorpyrifos  | $\nu$ | <b>0.11</b><br>(0.01 - 0.21)    | 0.1<br>(0 - 0.19)               | -3.27<br>(-3.45 - -3.1)  | -2.63<br>(-2.79 - -2.48) | -3.22<br>(-3.39 - -3.05) | -3.42<br>(-3.61 - -3.23) |
| 29 | Clothianidin  | $\nu$ | -0.05<br>(-0.3 - 0.2)           | 0.19<br>(-0.07 - 0.44)          | -2.66<br>(-3.06 - -2.26) | -2.58<br>(-2.97 - -2.19) | -3.19<br>(-3.69 - -2.69) | -3.93<br>(-4.46 - -3.41) |

|    |               |       |                              |                              |                          |                          |                          |                          |
|----|---------------|-------|------------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 30 | Diflufenican  | $\nu$ | 0.06<br>(-0.02 - 0.14)       | <b>0.26</b><br>(0.17 - 0.34) | -1.89<br>(-2.03 - -1.75) | -2.45<br>(-2.59 - -2.31) | -3.14<br>(-3.3 - -2.98)  | -2.09<br>(-2.22 - -1.95) |
| 31 | Dimethenamid  | $\nu$ | -0.04<br>(-0.16 - 0.08)      | <b>0.22</b><br>(0.11 - 0.34) | -3.44<br>(-3.69 - -3.2)  | -2.7<br>(-2.88 - -2.51)  | -2.79<br>(-2.98 - -2.59) | -2.99<br>(-3.19 - -2.78) |
| 32 | Dimoxystrobin | $\nu$ | 0.19<br>(-0.02 - 0.41)       | <b>0.23</b><br>(0.01 - 0.46) | -3.37<br>(-3.78 - -2.96) | -2.25<br>(-2.58 - -1.91) | -3.14<br>(-3.55 - -2.72) | -3.58<br>(-4.02 - -3.15) |
| 33 | Diuron        | $\nu$ | 0.05<br>(-0.01 - 0.12)       | <b>0.28</b><br>(0.22 - 0.35) | -3.88<br>(-4.09 - -3.67) | -1.67<br>(-1.76 - -1.58) | -1.74<br>(-1.84 - -1.63) | -2.72<br>(-2.85 - -2.6)  |
| 34 | Ethofumesat   | $\nu$ | 0.09<br>(-0.01 - 0.18)       | <b>0.21</b><br>(0.12 - 0.3)  | -4.39<br>(-4.63 - -4.16) | -2.23<br>(-2.35 - -2.11) | -3.49<br>(-3.66 - -3.32) | -4.23<br>(-4.44 - -4.01) |
| 35 | Flufenacet    | $\nu$ | <b>0.16</b><br>(0.06 - 0.27) | <b>0.59</b><br>(0.49 - 0.69) | -2.57<br>(-2.75 - -2.39) | -3.8<br>(-4.01 - -3.58)  | -4.17<br>(-4.44 - -3.89) | -1.76<br>(-1.88 - -1.64) |
| 36 | Glyphosate    | $\nu$ | 0.11<br>(0 - 0.23)           | <b>0.29</b><br>(0.18 - 0.4)  | -1.79<br>(-2.09 - -1.48) | -0.12<br>(-0.3 - 0.05)   | 0.34<br>(0.17 - 0.51)    | -0.53<br>(-0.73 - -0.32) |
| 37 | Imidacloprid  | $\nu$ | -0.01<br>(-0.26 - 0.25)      | -0.1<br>(-0.34 - 0.15)       | -4.68<br>(-5.35 - -4)    | -3.04<br>(-3.41 - -2.68) | -2.83<br>(-3.21 - -2.45) | -4.07<br>(-4.56 - -3.58) |
| 38 | Isoproturon   | $\nu$ | 0.04<br>(-0.02 - 0.09)       | <b>0.31</b><br>(0.25 - 0.36) | -1.82<br>(-1.93 - -1.7)  | -1.19<br>(-1.27 - -1.12) | -2.11<br>(-2.22 - -2.01) | -0.8<br>(-0.88 - -0.72)  |
| 39 | MCPA          | $\nu$ | -0.06<br>(-0.13 - 0.02)      | <b>0.35</b><br>(0.28 - 0.42) | -3.79<br>(-4.04 - -3.54) | -1.27<br>(-1.37 - -1.18) | -1.81<br>(-1.93 - -1.68) | -2.77<br>(-2.92 - -2.62) |
| 40 | Mecoprop      | $\nu$ | 0.07<br>(-0.01 - 0.15)       | <b>0.35</b><br>(0.27 - 0.42) | -3.04<br>(-3.23 - -2.84) | -1.56<br>(-1.67 - -1.45) | -1.89<br>(-2.02 - -1.76) | -2.71<br>(-2.86 - -2.56) |
| 41 | Metazachlor   | $\nu$ | 0.06<br>(-0.01 - 0.13)       | <b>0.21</b><br>(0.14 - 0.27) | -2.81<br>(-2.94 - -2.67) | -3.22<br>(-3.36 - -3.09) | -2.11<br>(-2.22 - -2.01) | -2.05<br>(-2.16 - -1.95) |
| 42 | Nicosulfuron  | $\nu$ | <b>0.2</b><br>(0.01 - 0.39)  | <b>0.26</b><br>(0.07 - 0.45) | -3.87<br>(-4.27 - -3.48) | -2.96<br>(-3.26 - -2.66) | -2.99<br>(-3.3 - -2.68)  | -3.23<br>(-3.56 - -2.9)  |
| 43 | Propiconazol  | $\nu$ | -0.02<br>(-0.13 - 0.09)      | <b>0.39</b><br>(0.29 - 0.5)  | -4.05<br>(-4.32 - -3.78) | -2.72<br>(-2.88 - -2.57) | -2.88<br>(-3.06 - -2.7)  | -3.43<br>(-3.63 - -3.24) |
| 44 | Quinmerac     | $\nu$ | -0.03<br>(-0.13 - 0.08)      | <b>0.32</b><br>(0.22 - 0.42) | -2.23<br>(-2.43 - -2.02) | -2.58<br>(-2.76 - -2.41) | -2.49<br>(-2.69 - -2.29) | -1.2<br>(-1.34 - -1.06)  |
| 45 | Tebuconazol   | $\nu$ | <b>0.1</b><br>(0.01 - 0.2)   | <b>0.3</b><br>(0.21 - 0.39)  | -3.41<br>(-3.61 - -3.2)  | -2.66<br>(-2.8 - -2.53)  | -2.9<br>(-3.06 - -2.75)  | -3.17<br>(-3.34 - -3)    |
| 46 | Terbutylazin  | $\nu$ | <b>0.06</b><br>(0.01 - 0.12) | <b>0.28</b><br>(0.22 - 0.33) | -2.92<br>(-3.05 - -2.79) | -1.45<br>(-1.53 - -1.37) | -1.48<br>(-1.57 - -1.39) | -2.47<br>(-2.58 - -2.37) |

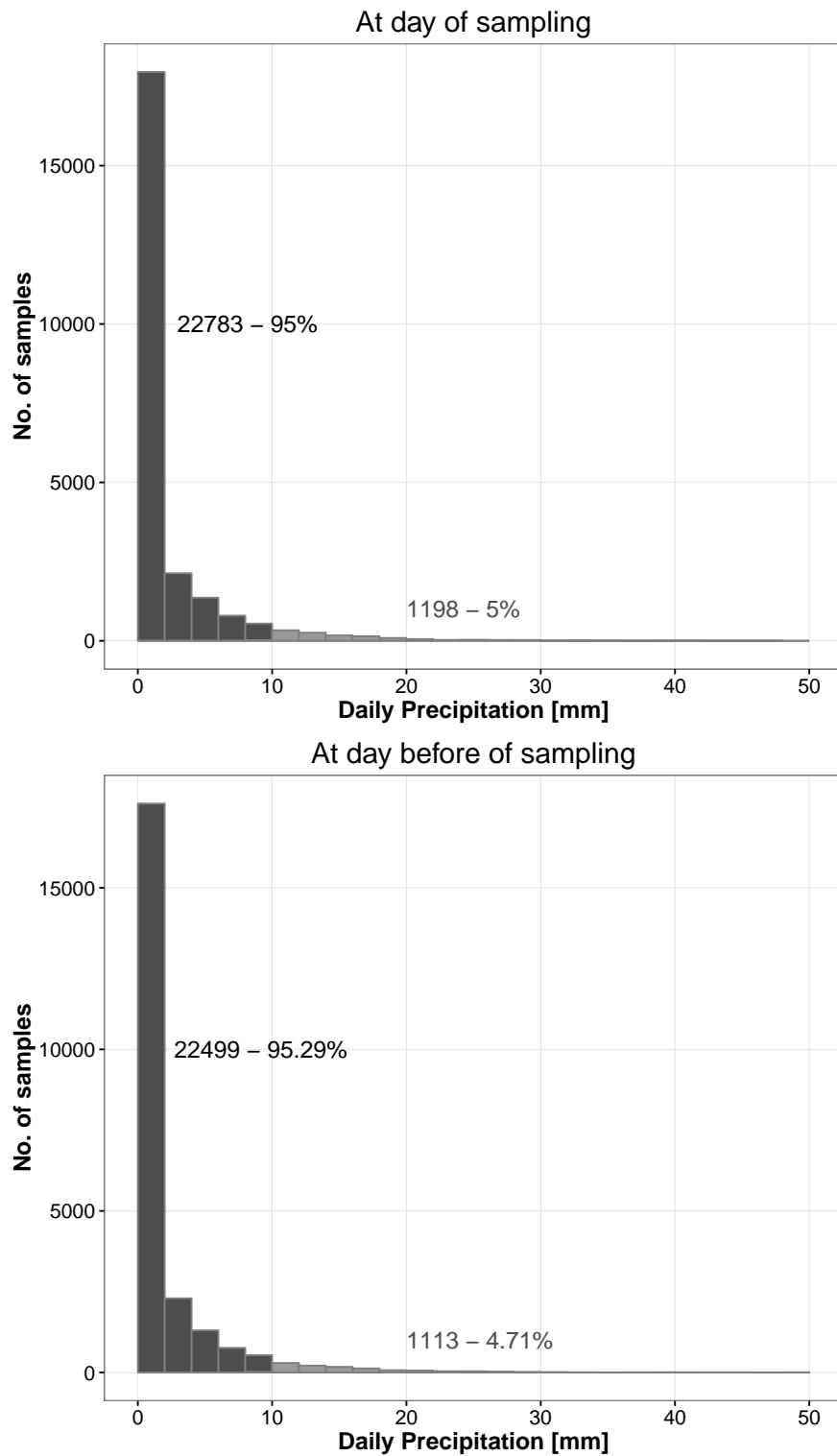


Figure S6: Distribution of precipitation at sampling occasions. top: at sampling date. bottom: at day before sampling.

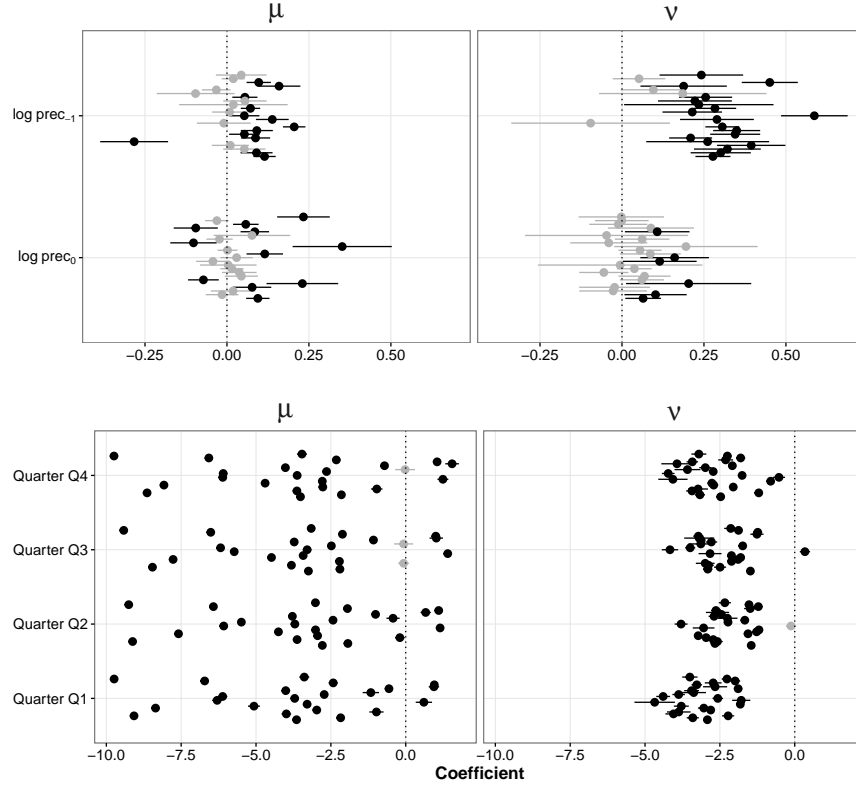


Figure S7: Graphical representation of coefficients from table S4. Top row: Effect of precipitation at day before sampling and at day of sampling. Bottom row: estimates for the four Quarters. Each dot represent one compound (in the order described in table S3). Coefficients where the CI encompasses zero are shown in gray colour. Coefficients are shown on the link scale (log for  $\mu$  and logit for  $\nu$ ).

## 5 Pesticides in small streams

Table S5: Overview on RAC exceedances of the 76 compounds with more the 1000 measurements. No. = number of measurements; % RQ >1 = RAC exceedances; % RQ >1 | >LOQ= RAC exceedances as fraction of detects.

| Name              | No.   | No.<br>>LOQ | %<br>>LOQ | No.<br>RQ >1 | % RQ<br>>1 | % RQ<br>>1  <br>>LOQ |
|-------------------|-------|-------------|-----------|--------------|------------|----------------------|
| 2,4-D             | 12290 | 284         | 2.3       | 10           | 0.1        | 3.5                  |
| Aclonifen         | 9861  | 67          | 0.7       | 4            | 0.0        | 6.0                  |
| Azoxystrobin      | 7059  | 690         | 9.8       | 6            | 0.1        | 0.9                  |
| Benalaxyl         | 6964  | 10          | 0.1       | 0            | 0.0        | 0.0                  |
| Bentazon          | 12429 | 2421        | 19.5      | 0            | 0.0        | 0.0                  |
| Boscalid          | 9886  | 2296        | 23.2      | 0            | 0.0        | 0.0                  |
| Bromoxynil        | 9451  | 78          | 0.8       | 0            | 0.0        | 0.0                  |
| Carbendazim       | 3851  | 654         | 17.0      | 12           | 0.3        | 1.8                  |
| Chloridazon       | 15724 | 511         | 3.2       | 0            | 0.0        | 0.0                  |
| Chlorpyrifos      | 14704 | 954         | 6.5       | 954          | 6.5        | 100.0                |
| Chlortoluron      | 18286 | 371         | 2.0       | 2            | 0.0        | 0.5                  |
| Clomazon          | 9268  | 440         | 4.7       | 0            | 0.0        | 0.0                  |
| Clopyralid        | 5520  | 107         | 1.9       | 0            | 0.0        | 0.0                  |
| Clothianidin      | 2409  | 154         | 6.4       | 123          | 5.1        | 79.9                 |
| Cypermethrin      | 1428  | 5           | 0.4       | 1            | 0.1        | 20.0                 |
| Cyprodinil        | 9779  | 118         | 1.2       | 0            | 0.0        | 0.0                  |
| Diflufenican      | 15457 | 1932        | 12.5      | 273          | 1.8        | 14.1                 |
| Dimefuron         | 7833  | 5           | 0.1       | 0            | 0.0        | 0.0                  |
| Dimethachlor      | 8858  | 344         | 3.9       | 0            | 0.0        | 0.0                  |
| Dimethenamid      | 9568  | 594         | 6.2       | 5            | 0.1        | 0.8                  |
| Dimethoat         | 14423 | 185         | 1.3       | 1            | 0.0        | 0.5                  |
| Dimethomorph      | 2316  | 91          | 3.9       | 0            | 0.0        | 0.0                  |
| Dimoxystrobin     | 3370  | 232         | 6.9       | 49           | 1.5        | 21.1                 |
| Diuron            | 18560 | 2336        | 12.6      | 40           | 0.2        | 1.7                  |
| Epoxiconazol      | 16454 | 621         | 3.8       | 7            | 0.0        | 1.1                  |
| Ethofumesat       | 20430 | 1078        | 5.3       | 0            | 0.0        | 0.0                  |
| Fenhexamid        | 2690  | 42          | 1.6       | 0            | 0.0        | 0.0                  |
| Fenpropimorph     | 12850 | 199         | 1.5       | 5            | 0.0        | 2.5                  |
| Fluazifop-P-butyl | 1728  | 0           | 0.0       | 0            | 0.0        |                      |

|                 |       |      |      |     |     |       |
|-----------------|-------|------|------|-----|-----|-------|
| Flufenacet      | 13509 | 798  | 5.9  | 1   | 0.0 | 0.1   |
| Fluquinconazole | 6762  | 117  | 1.7  | 0   | 0.0 | 0.0   |
| Fluroxypyr      | 8096  | 378  | 4.7  | 0   | 0.0 | 0.0   |
| Flurtamone      | 16958 | 638  | 3.8  | 2   | 0.0 | 0.3   |
| Flusilazol      | 5257  | 53   | 1.0  | 1   | 0.0 | 1.9   |
| Glyphosate      | 3557  | 1455 | 40.9 | 1   | 0.0 | 0.1   |
| Imidacloprid    | 3169  | 192  | 6.1  | 169 | 5.3 | 88.0  |
| Ioxynil         | 8114  | 20   | 0.2  | 0   | 0.0 | 0.0   |
| Isoproturon     | 19112 | 4164 | 21.8 | 92  | 0.5 | 2.2   |
| Kresoxim-methyl | 6929  | 14   | 0.2  | 0   | 0.0 | 0.0   |
| Lenacil         | 13837 | 183  | 1.3  | 0   | 0.0 | 0.0   |
| MCPA            | 12773 | 1687 | 13.2 | 2   | 0.0 | 0.1   |
| Mecoprop        | 12521 | 1552 | 12.4 | 0   | 0.0 | 0.0   |
| Metalaxyl       | 14460 | 299  | 2.1  | 0   | 0.0 | 0.0   |
| Metamitron      | 15390 | 613  | 4.0  | 0   | 0.0 | 0.0   |
| Metazachlor     | 21906 | 2015 | 9.2  | 55  | 0.3 | 2.7   |
| Methamidophos   | 1303  | 0    | 0.0  | 0   | 0.0 |       |
| Methobromuron   | 14968 | 24   | 0.2  | 1   | 0.0 | 4.2   |
| Metribuzin      | 15411 | 192  | 1.2  | 15  | 0.1 | 7.8   |
| Napropamid      | 9914  | 269  | 2.7  | 1   | 0.0 | 0.4   |
| Nicosulfuron    | 5172  | 288  | 5.6  | 77  | 1.5 | 26.7  |
| Penconazol      | 4846  | 159  | 3.3  | 0   | 0.0 | 0.0   |
| Pendimethalin   | 16997 | 328  | 1.9  | 4   | 0.0 | 1.2   |
| Pethoxamid      | 3102  | 37   | 1.2  | 0   | 0.0 | 0.0   |
| Phoxim          | 1492  | 0    | 0.0  | 0   | 0.0 |       |
| Picolinafen     | 8901  | 11   | 0.1  | 2   | 0.0 | 18.2  |
| Picoxystrobin   | 3620  | 7    | 0.2  | 0   | 0.0 | 0.0   |
| Pirimicarb      | 11330 | 232  | 2.0  | 27  | 0.2 | 11.6  |
| Prochloraz      | 5795  | 33   | 0.6  | 0   | 0.0 | 0.0   |
| Propiconazol    | 14250 | 818  | 5.7  | 7   | 0.0 | 0.9   |
| Propyzamid      | 11937 | 453  | 3.8  | 0   | 0.0 | 0.0   |
| Prosulfocarb    | 5001  | 126  | 2.5  | 0   | 0.0 | 0.0   |
| Pyrimethanil    | 8136  | 122  | 1.5  | 0   | 0.0 | 0.0   |
| Quinmerac       | 7291  | 989  | 13.6 | 0   | 0.0 | 0.0   |
| Spiroxamin      | 2469  | 109  | 4.4  | 1   | 0.0 | 0.9   |
| Tebuconazol     | 16584 | 1024 | 6.2  | 26  | 0.2 | 2.5   |
| Terbuthylazin   | 22568 | 3370 | 14.9 | 35  | 0.2 | 1.0   |
| Thiacloprid     | 3540  | 85   | 2.4  | 85  | 2.4 | 100.0 |
| Thiamethoxam    | 1853  | 39   | 2.1  | 7   | 0.4 | 17.9  |
| Triadimenol     | 3067  | 51   | 1.7  | 0   | 0.0 | 0.0   |
| Triazophos      | 3588  | 2    | 0.1  | 1   | 0.0 | 50.0  |
| Trifloxystrobin | 3674  | 10   | 0.3  | 1   | 0.0 | 10.0  |
| Dicamba         | 7641  | 76   | 1.0  | 0   | 0.0 | 0.0   |
| Fludioxonil     | 3203  | 42   | 1.3  | 1   | 0.0 | 2.4   |

|               |      |    |     |   |     |      |
|---------------|------|----|-----|---|-----|------|
| Difenoconazol | 1644 | 11 | 0.7 | 2 | 0.1 | 18.2 |
| Rimsulfuron   | 1240 | 2  | 0.2 | 0 | 0.0 | 0.0  |
| Fluazifop-P   | 4033 | 14 | 0.3 | 0 | 0.0 | 0.0  |

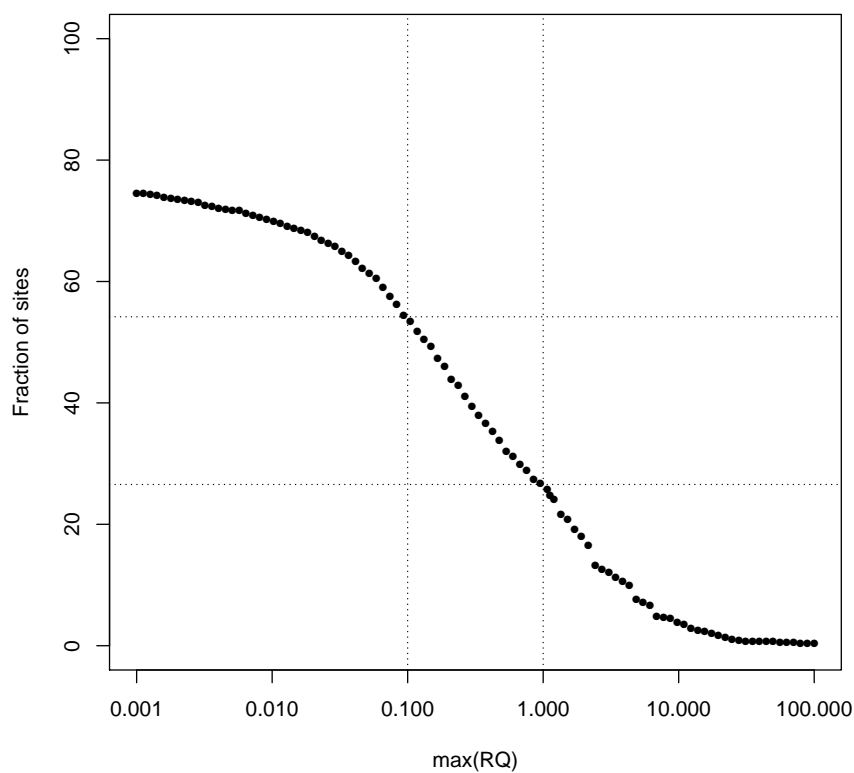


Figure S8: Cumulative distribution of sites exceeding RAC. Dotted lines indicate fraction of sites exceeding a RQ of 1 and 0.1. 23% of sites showed no detection of compounds with RAC and are not shown due to logarithmic x-axis.

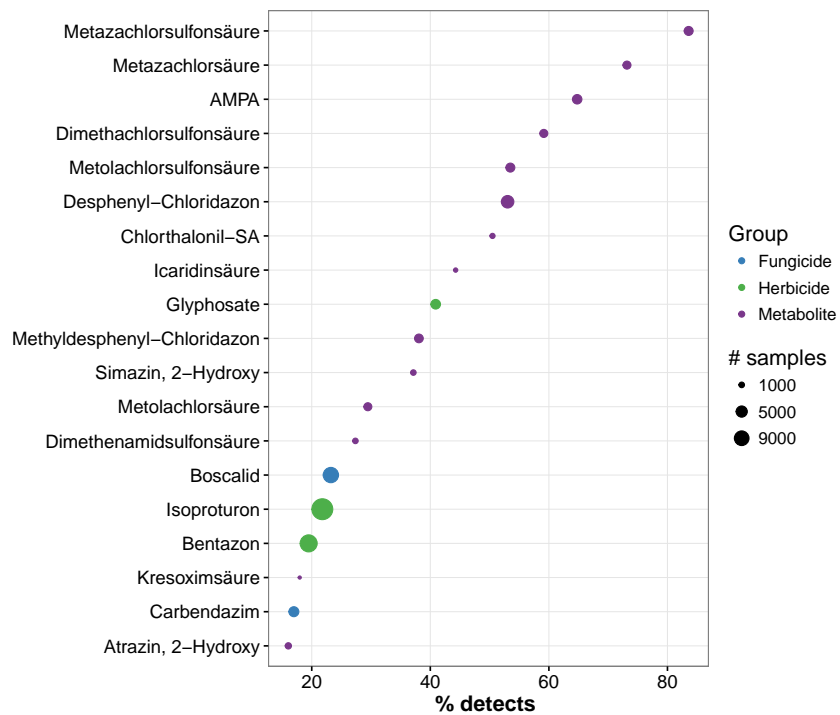


Figure S9: Proportion of samples with detects in small streams. Only Compounds with more than 100 samples and 15% of detects are show.



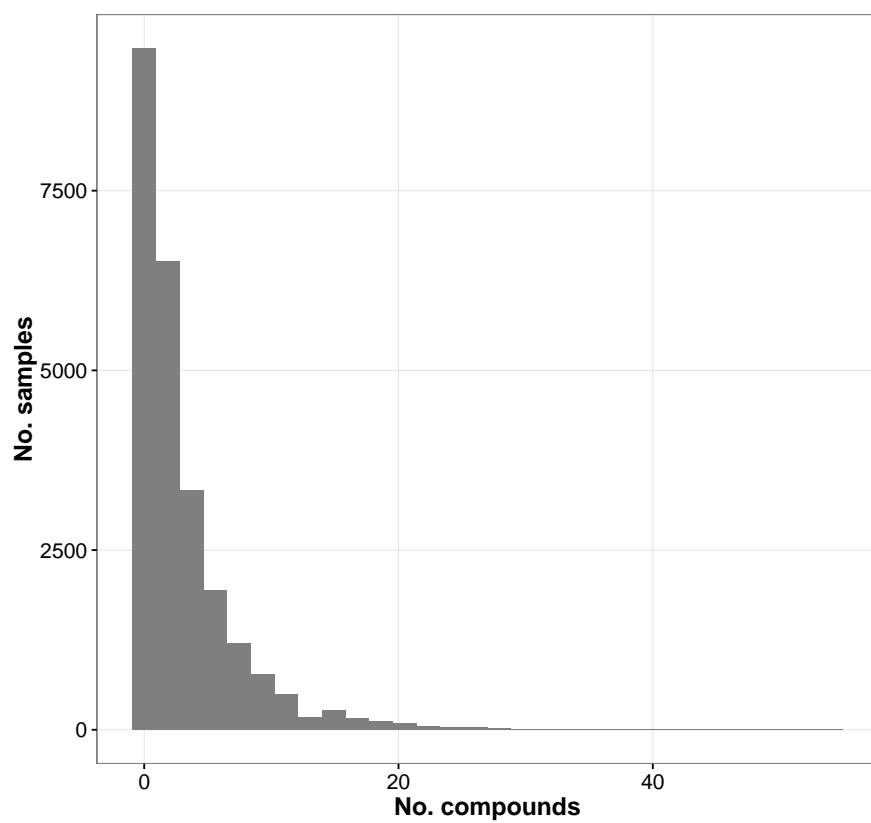


Figure S10: Distribution of the number of quantified compounds in the samples.