



Exposures to Neonicotinoid Insecticides in Occupational Settings in Ireland

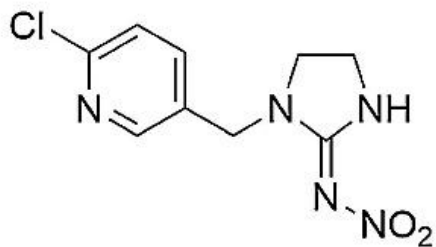
Darragh M. Doherty

PhD Student

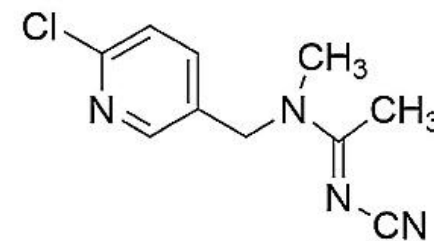
Conway Institute

University College Dublin

Neonicotinoid Insecticides



Imidacloprid



Acetamiprid



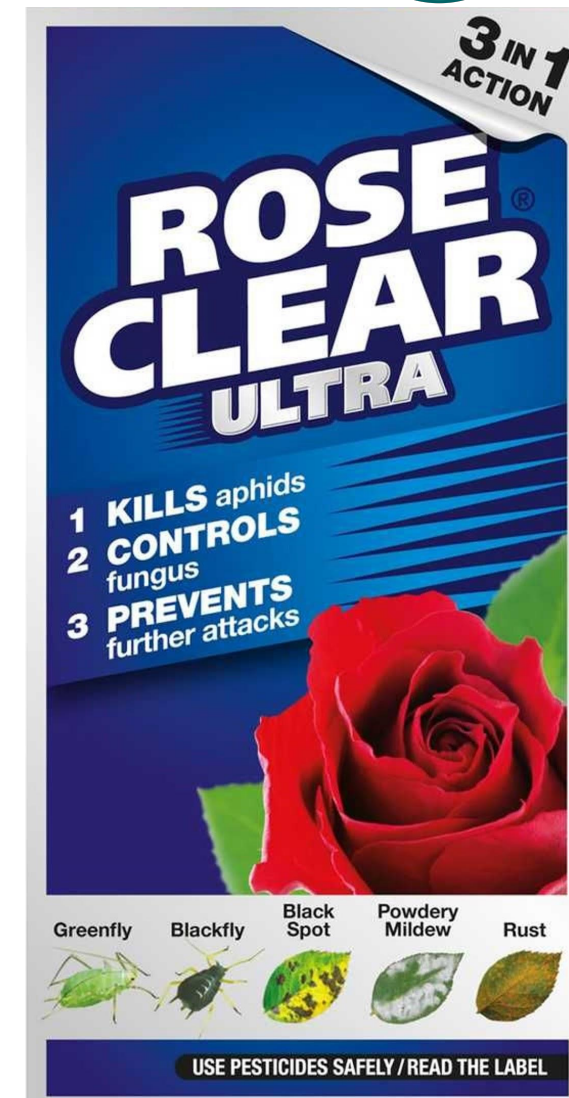
Imidacloprid



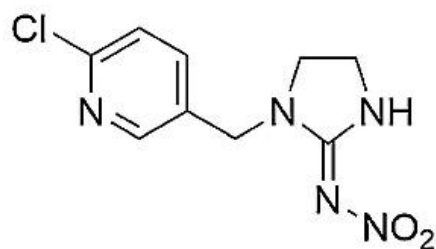
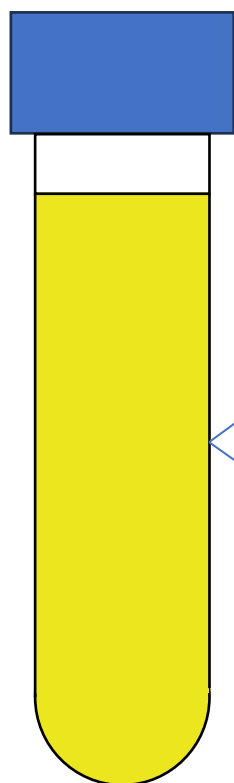
Flea treatments for
pets

Plant protection
products

Acetamiprid



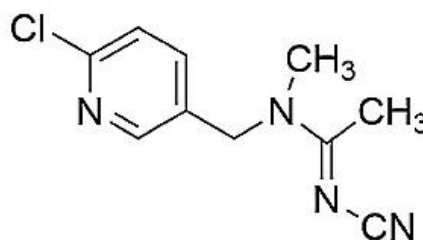
Measures chemical exposure by analysing biological material



Imidacloprid

Metabolites

Imidacloprid Olefin (IMI-olefin)
4/5 Hydroxy Imidacloprid (4/5 OH-IMI)

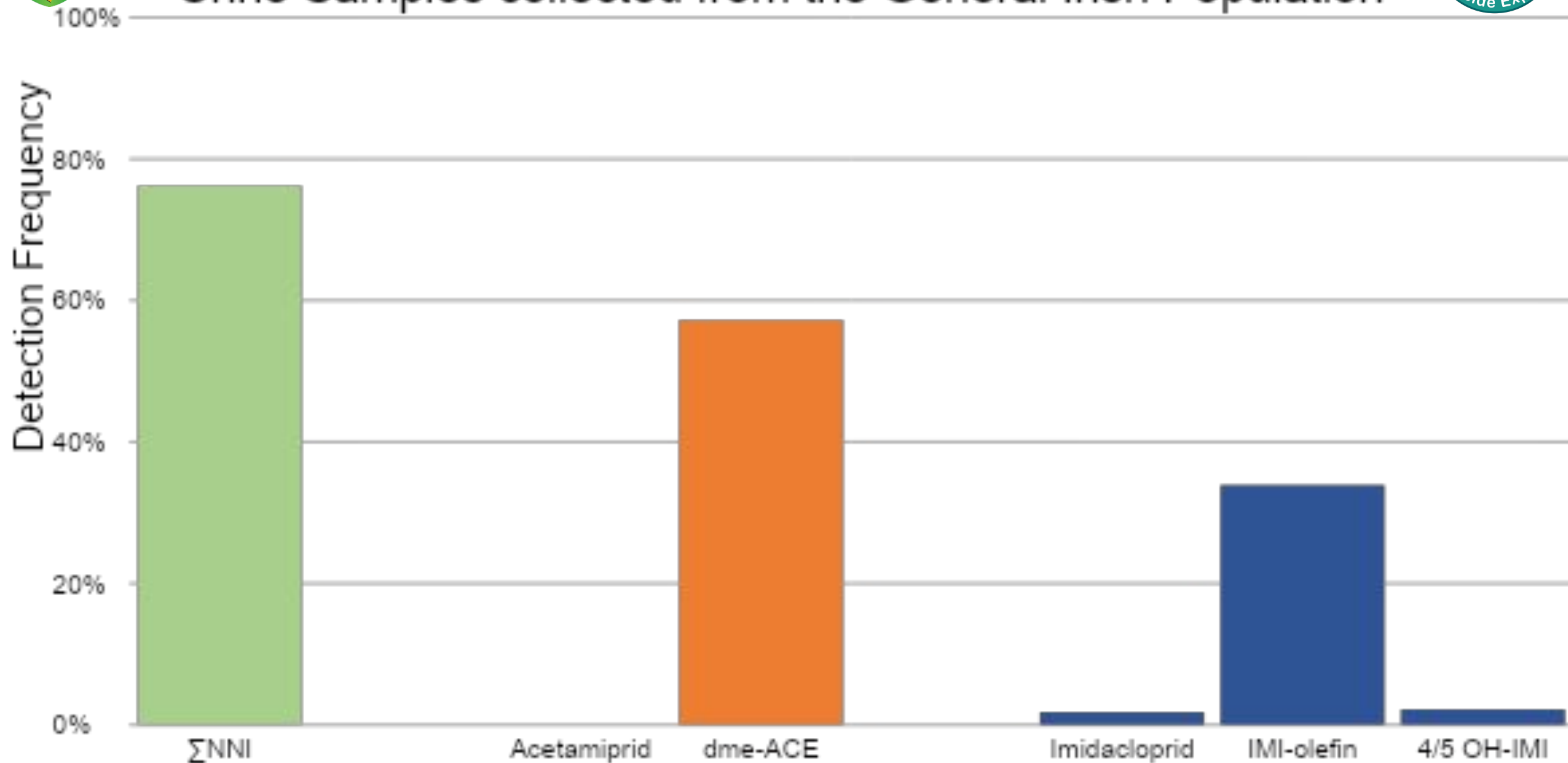


Acetamiprid

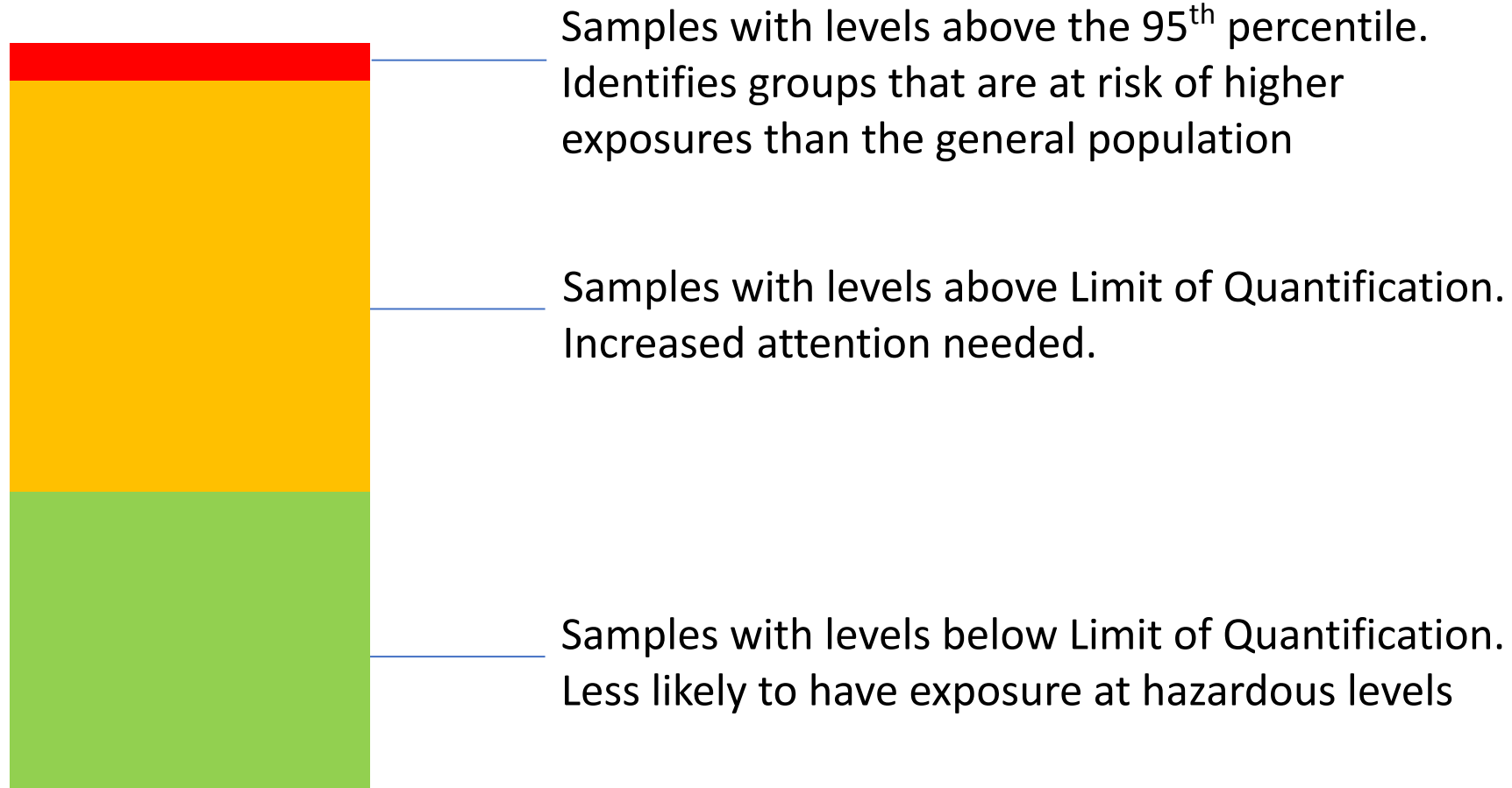
N-Desmethyl Acetamiprid (dme ACE)



Detection Frequency of Neonicotinoid Insecticides in 227 Urine Samples collected from the General Irish Population



Reference Values



Reference Values



Samples with levels above the 95th percentile.
Can indicate occupation exposure

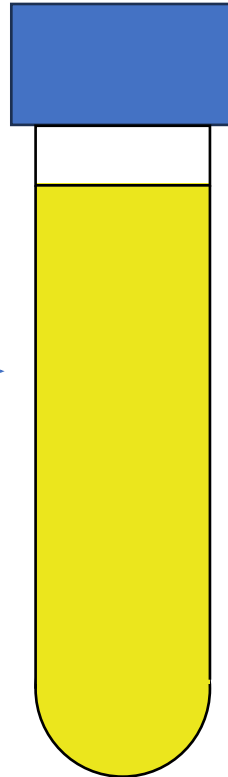
IMI-olefin: 1.19 µg/L

dme-ACE: 2.69 µg/L

Occupational Exposure to Imidacloprid Among Pet Shelter Workers



Eight Pet Shelter Workers

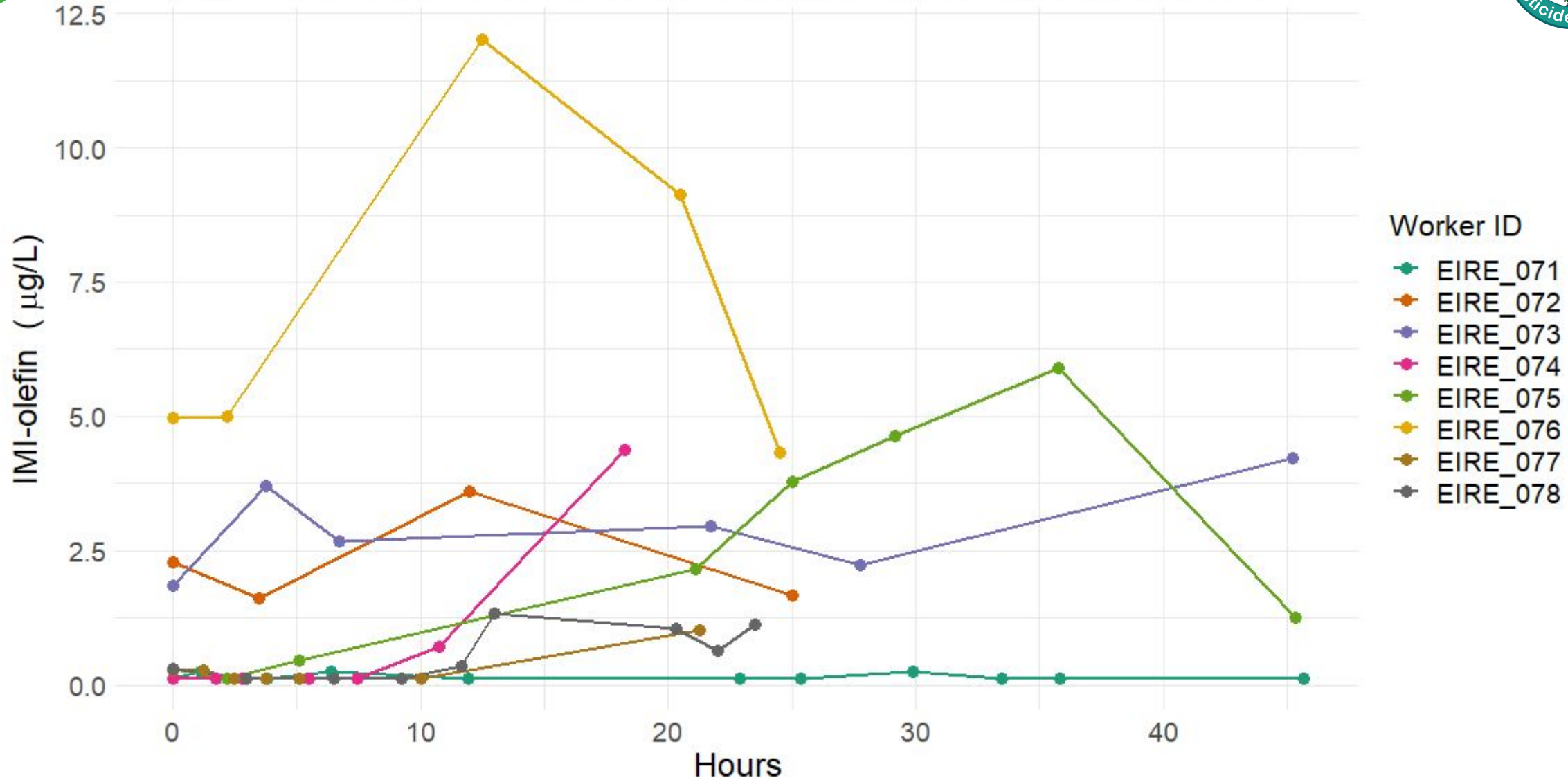


Collected urine samples over
24/48 hours during work

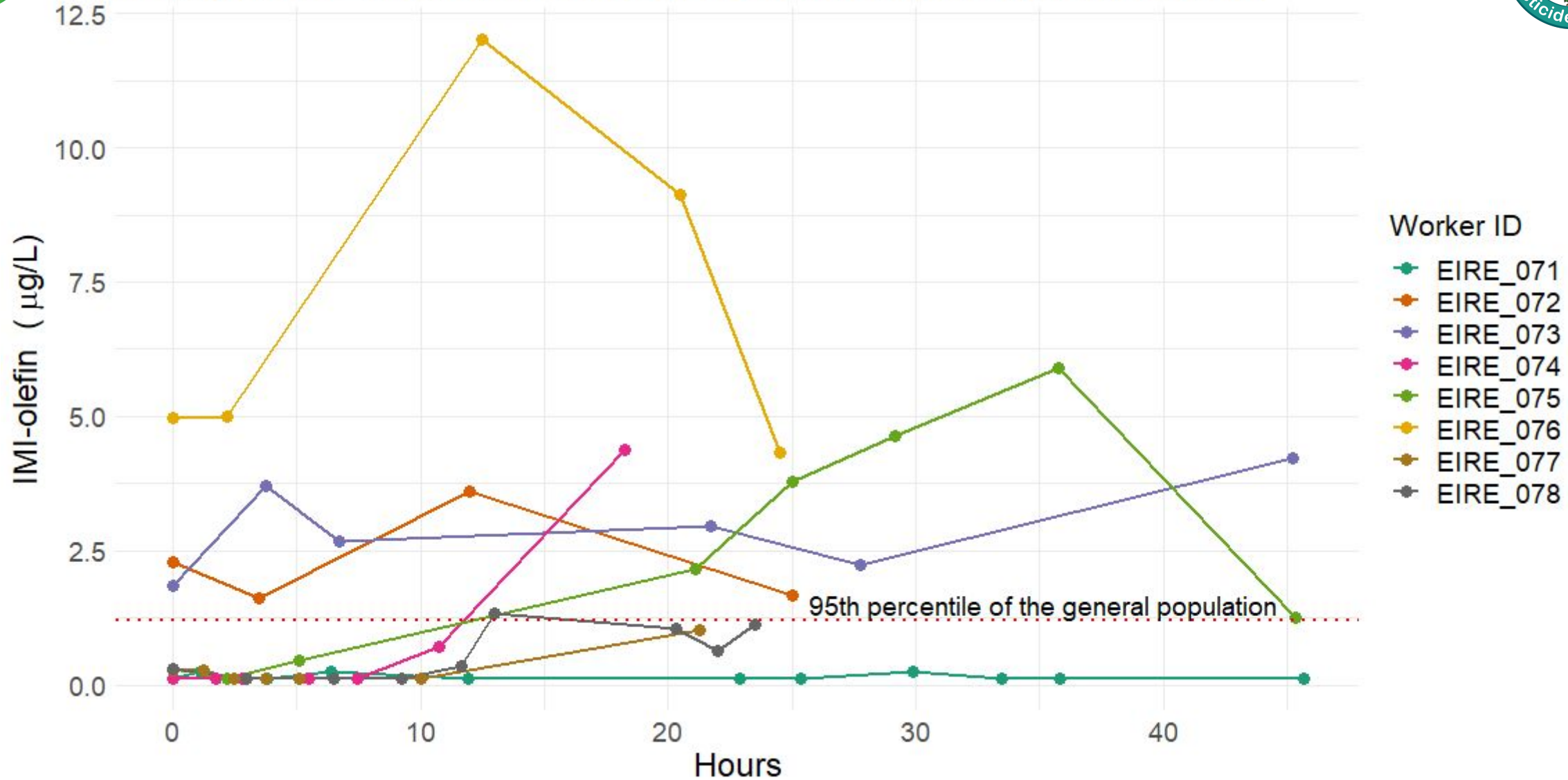
Analysed for Imidacloprid,
IMI-olefin, and 4/5 OH-IMI



Urinary Levels of IMI-olefin From 8 Pet Shelter Workers over 24/48 Hours



Urinary Levels of IMI-olefin From 8 Pet Shelter Workers over 24/48 Hours





Recommendations on Exposure Reduction

Wear gloves when handling a pet that has recently been given a flea treatment

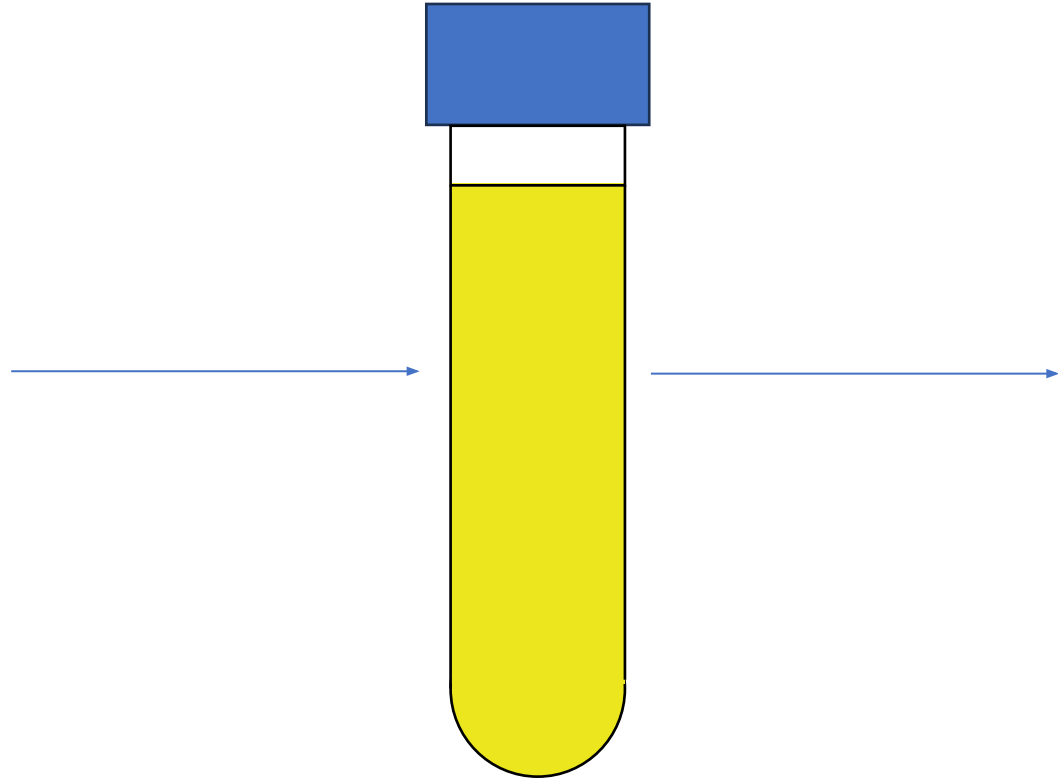
Wash hands thoroughly before and after interacting with pets

Keep a detailed log of which pets have been given flea treatments

Occupational Exposure to Acetamiprid Among Professional Gardeners



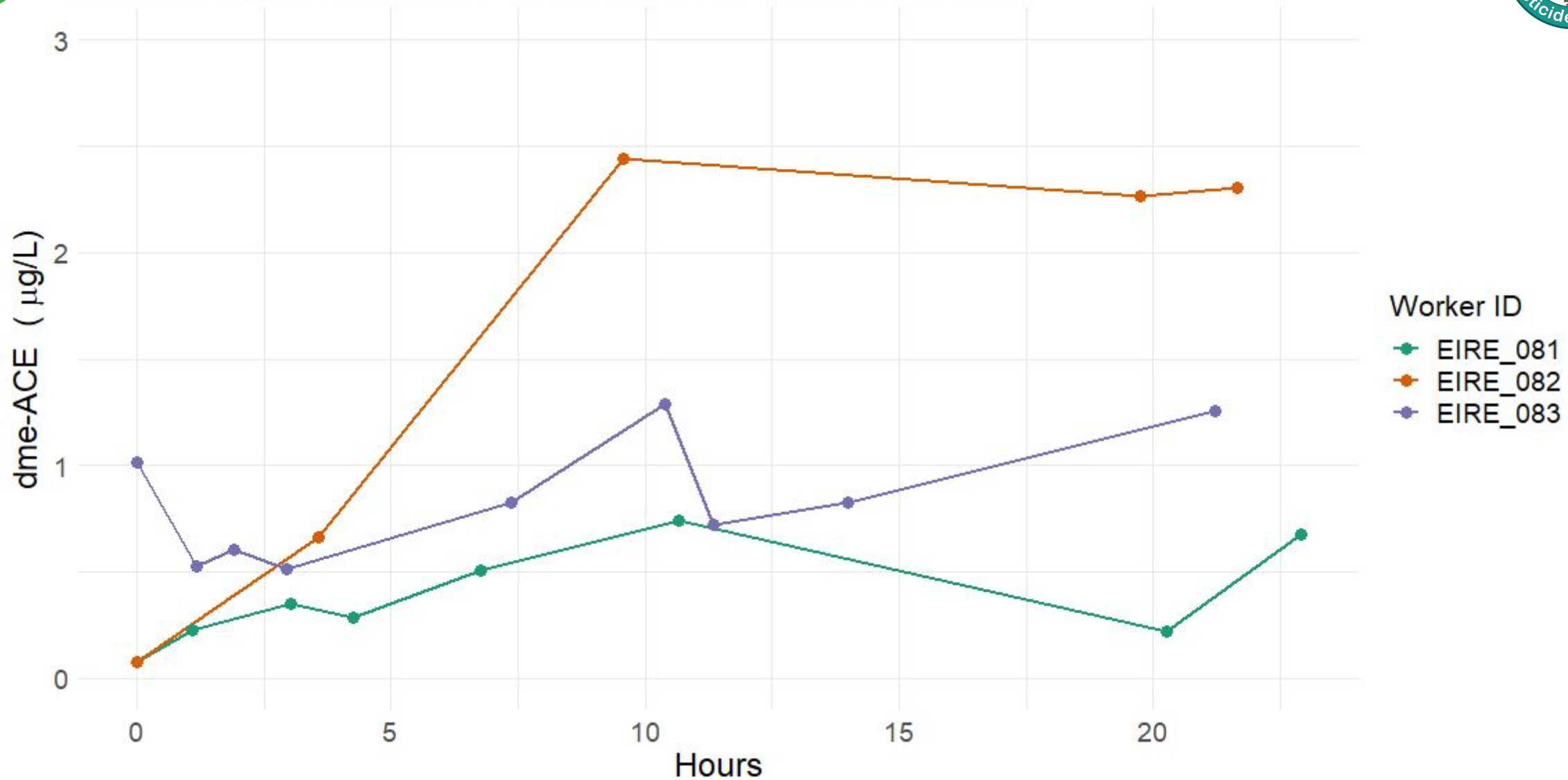
3 Professional Gardeners



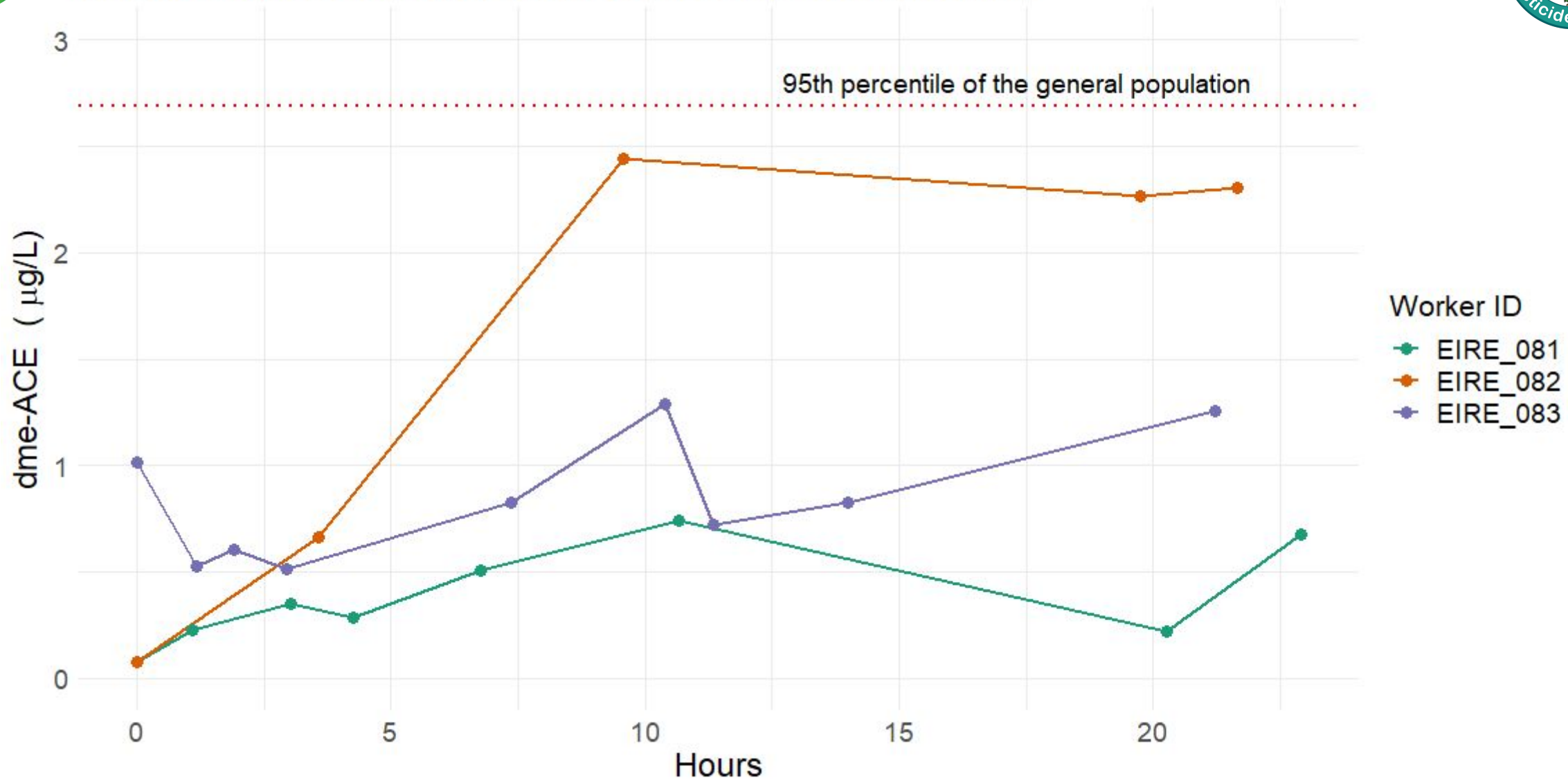
Analysed for Acetamiprid,
and dme-ACE

Collected urine samples over
24 hours. The first sample was
collected before spraying

Urinary Levels of dme-ACE From 3 Gardeners over 24 Hours



Urinary Levels of dme-ACE From 3 Gardeners over 24 Hours





Conclusion

Human
Biomonitoring

Measure internal chemical
exposure

95th Percentile

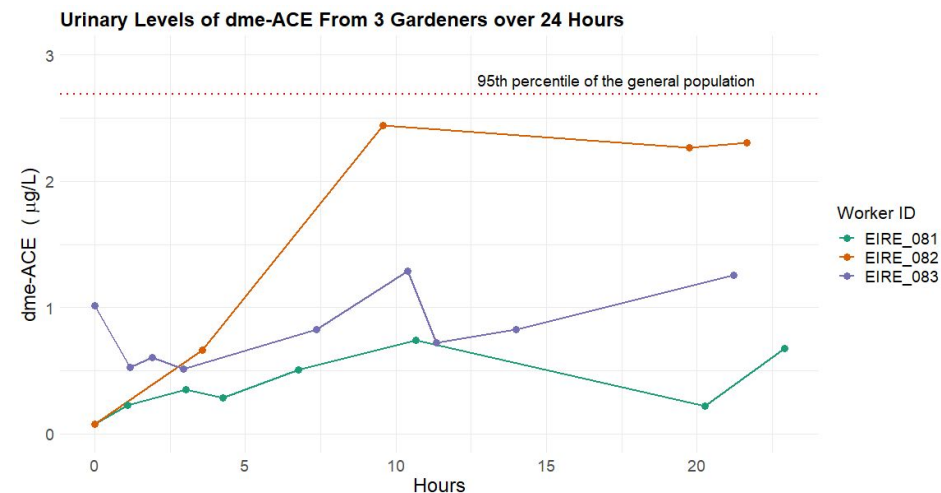
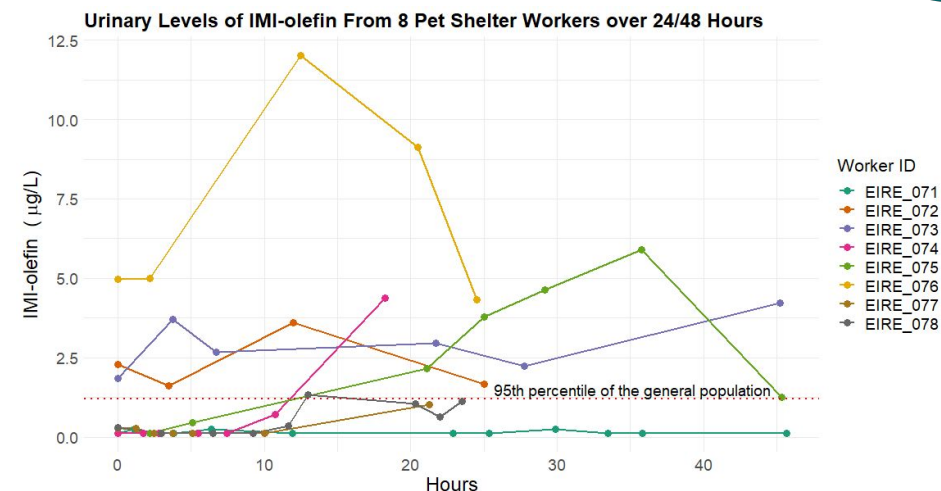
Show occupational exposure

Pet Shelter
Workers

Increased imidacloprid
exposure

Gardeners

No indication of increased
acetamiprid exposure



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