Stability of Mixed CRMs Over Time

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Objective

- Show the effects of time on combined mixture concentration under various conditions

- LC Multiresidue Pesticide Kit
  - 204 residues
  - Comes as 10 stable pesticide mixes diluted in acetonitrile
    - 100 ppm each
  - Concerns with stability over time after mixing
    - 10 ppm after all combined
  - Diluted to 1 ppb in 10:90 Acetonitrile (ACN):H_2O

Disclaimer

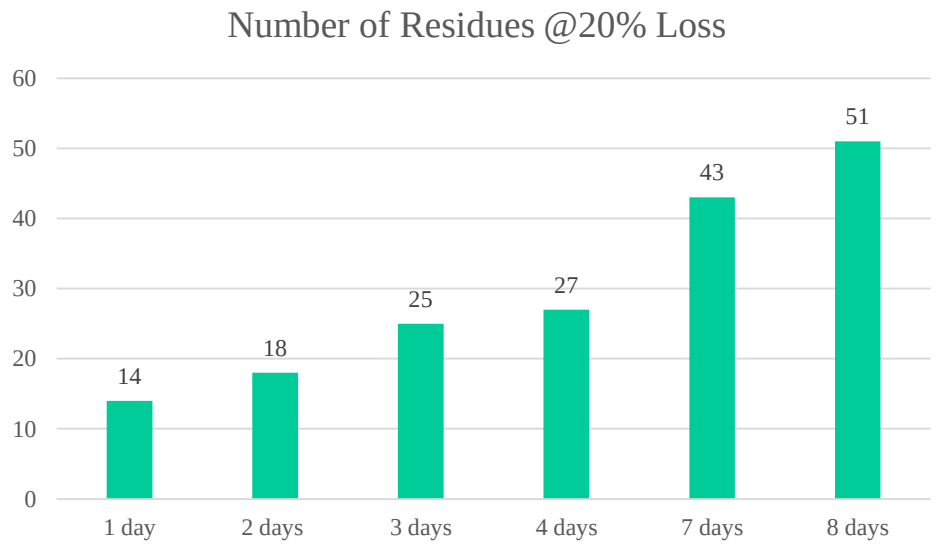
When combining a large number of compounds with different chemical functionalities, mix stability can be an issue. In formulating these standards, we extensively studied the 204 compounds involved, and then grouped them into as few mixes as possible while still ensuring maximum long-term stability and reliability. For quantitative analysis, we recommend analyzing each mix separately to ensure accurate results for every compound.

Storage: Fridge vs Autosampler (1 week)

- Area and Area Ratios were measured over a week
  - Fridge (7 °C): 22 signals decreased by 20%; 10 decreased by 50%
  - Autosampler (4 °C): 19 signals decreased by 20%; 13 decreased by 50%
- Concentrations based on calibration curve were largely intact
- Incoming samples could have some residue signals artificially enhanced because of decreased signal still calibrating properly.

Storage on Autosampler for 1 week with Matrix

- All samples made with 10% ACN containing celery extract.



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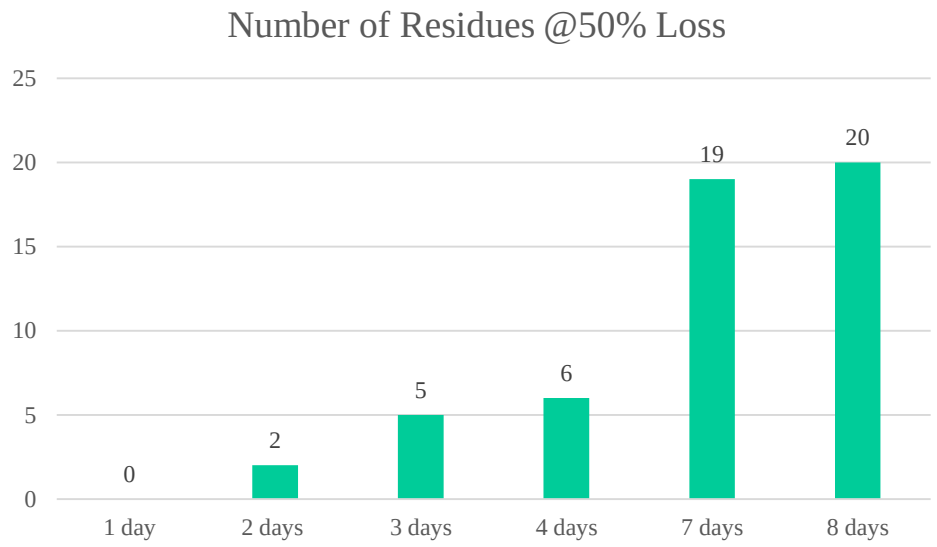

Conclusion

- Residues degrade over time after mixing
  - Fridge and Autosampler are similar
- Even simple matrices augment degradation
- Individual standards mixes should be combined daily