

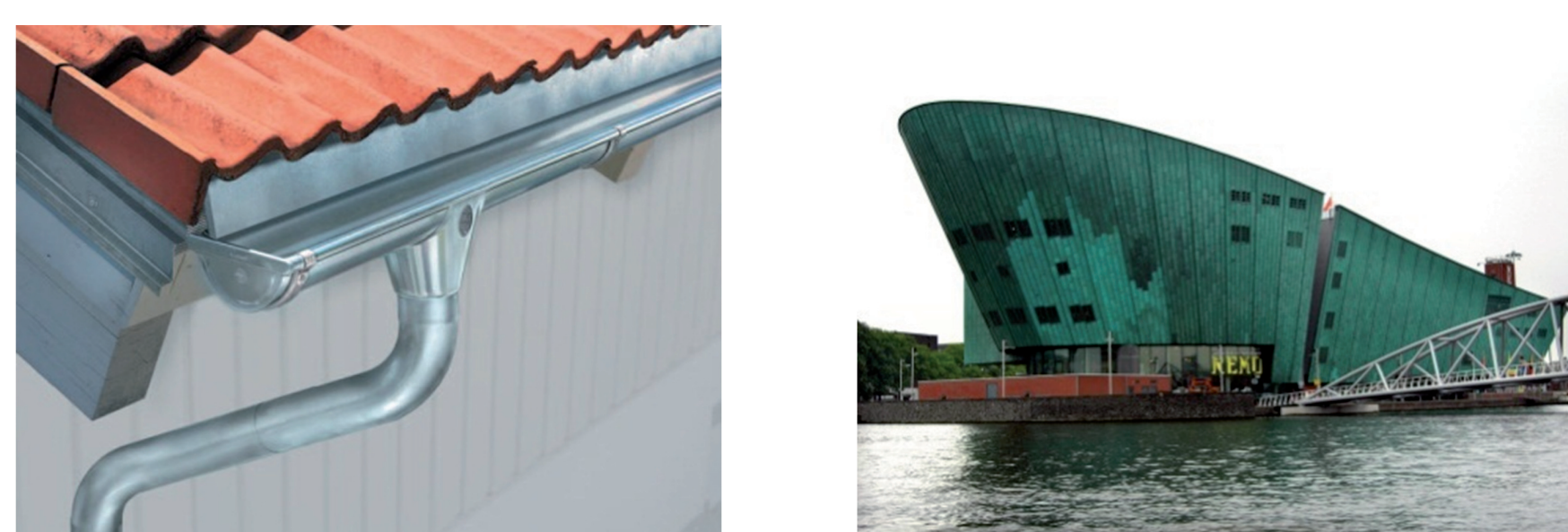
Development of a leaching test for metal surfaces

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Why a new leaching test?

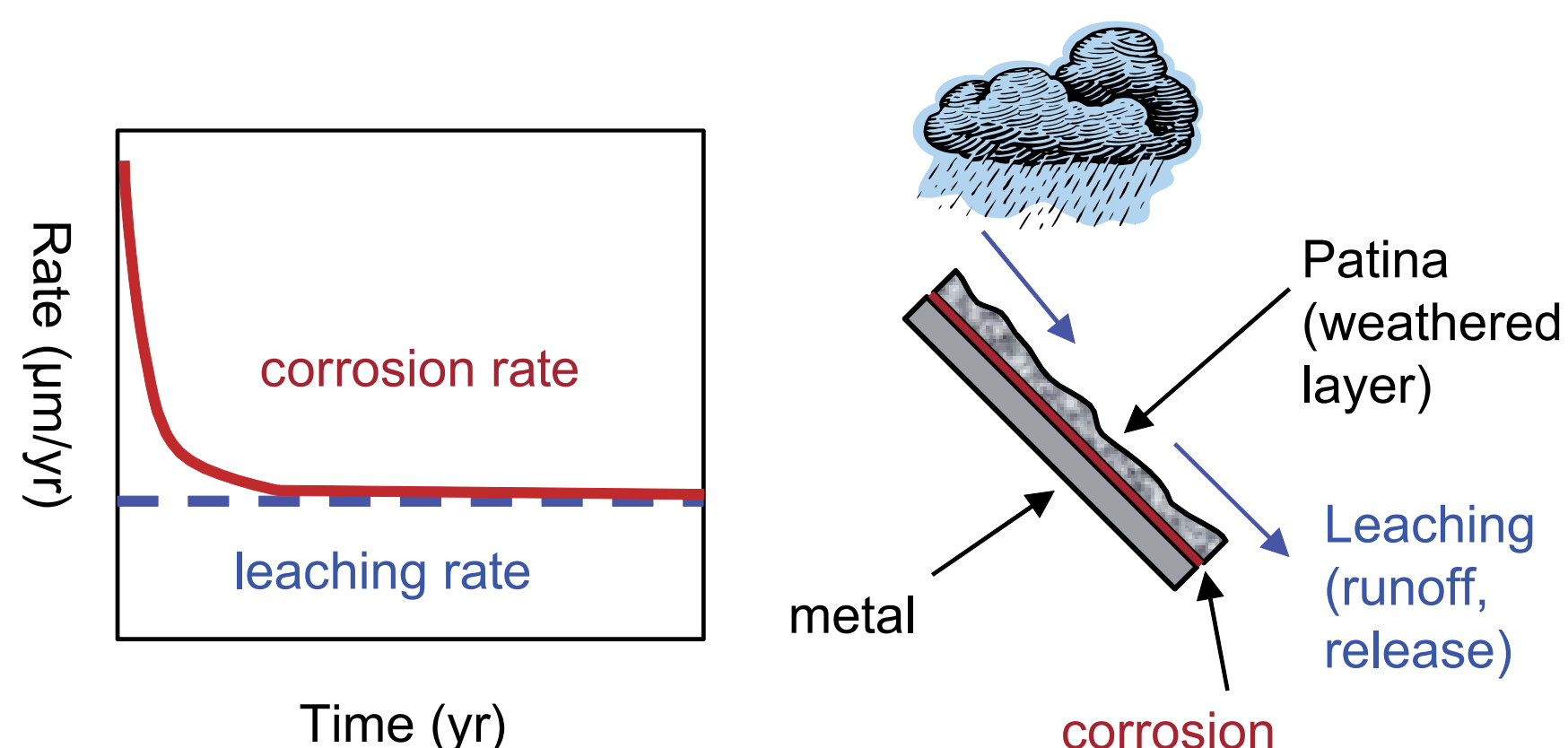
- CEN TC 351 mandated to develop test methods for all construction products, but a test for metals does not exist yet.
- There is many data from field measurements for common metals (zinc, copper, lead)
- However, not many data for new alloys.
- Industry wants also a short test, along with existing expensive (corrosion and leaching) field tests.
- Observed leaching varies with geographical location.
- Corrected for rainfall, bandwidth leaching is small.

Examples of metal products



Scope: zinc gutters, copper roofs, galvanized crash barriers, lead slabs used on roofs, and more.

Leaching rate is not the same as corrosion rate

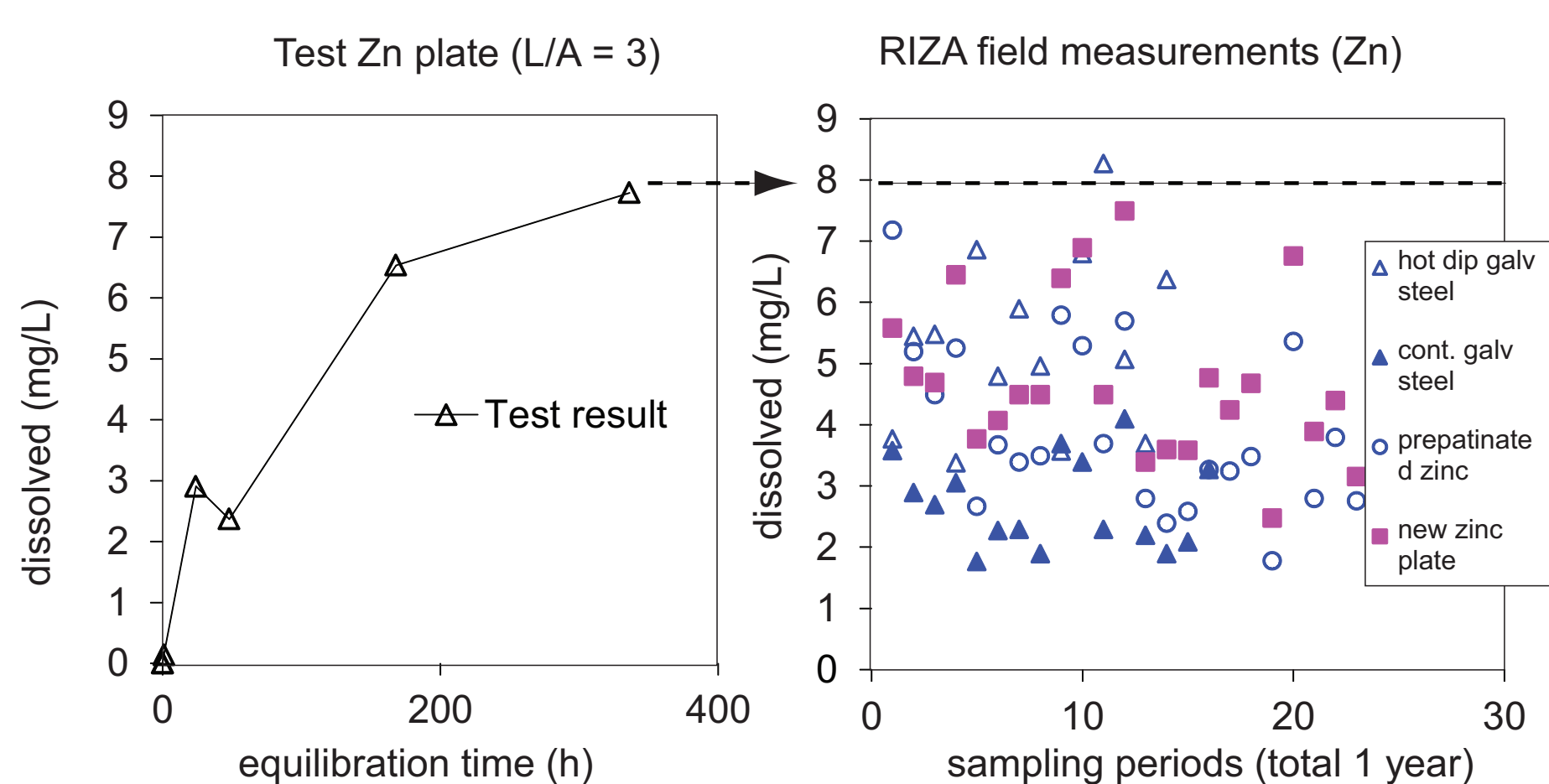


Modified “tank test”

Critical parameters:

- Equilibration time
- Aeration of leachant during the test
- Expression of result: mg/L, mg/m².y
- Equilibrium is more quickly attained at low liquid-to-area (L/A)

Example of test results and field measurements



Conclusions

- Surprisingly good similarity between test and field
- Also observed for lead, copper, aluminium
- Very low L/A in the field may explain apparent near-equilibrium
- Test provides upper estimate (unless other conditions are chosen)
- Parallel route is rainfall simulation in laboratory, which can have added value to understand dynamic behaviour in the field.
- A test will not replace a field measurement, but can be a useful estimate of leaching behaviour under standard conditions for industry & regulators

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Pictures: Copper Smith Ltd, Amsterdam City Website. Drawing leaching corrosion: after Odnevall Wallinder et al., J Env Monit 2004, 6, 704-712.