

The Danish situation

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- Full scale model biobed
- Axon Environmetal filter
- Danish regulation



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Biobed research

- The model biobed:
- Concrete pit (3.8 m x 4 m)
- Turf layer
- 50 cm biobed material (Swedish recipe)
 - 25% soil (A-horizon),
 - 25% sphagnum
 - 50% chopped straw
- 10 cm clay membrane
- 15 cm sand with drain to collecting percolate



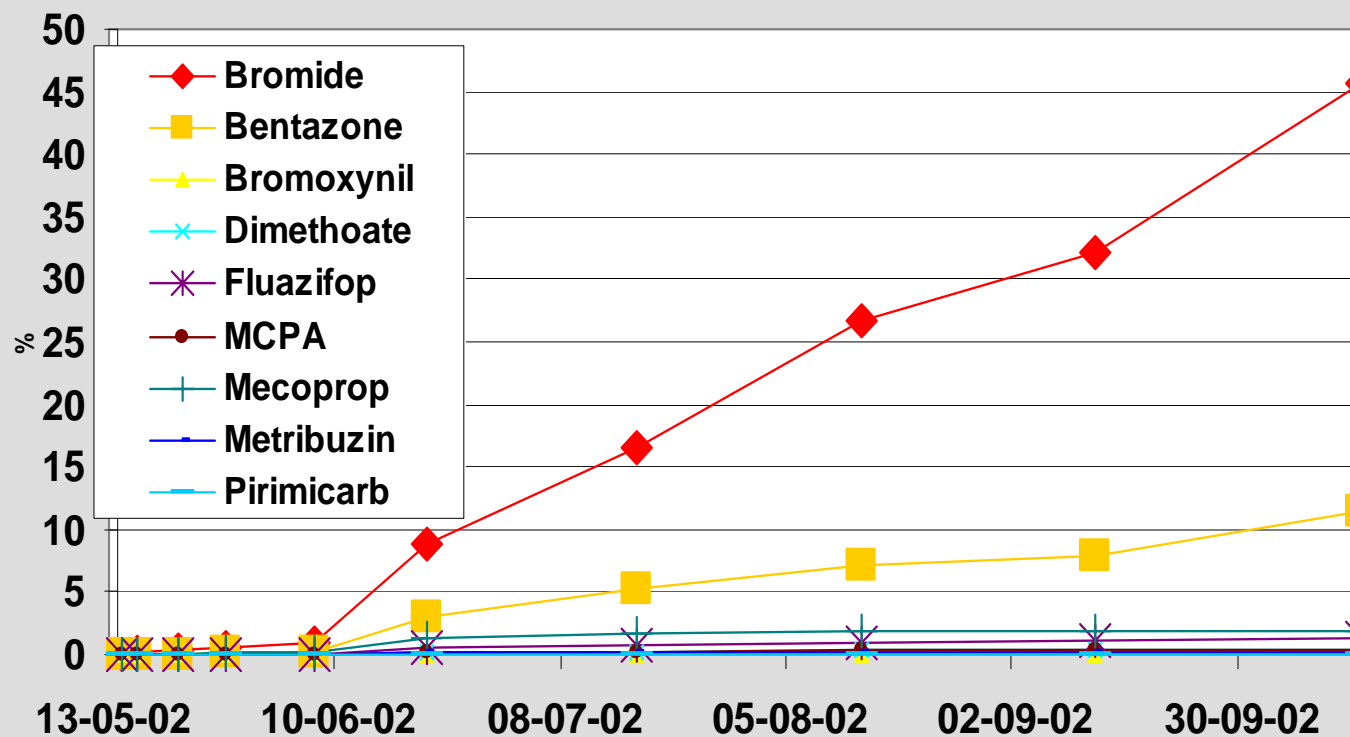


**21 pesticides 5 g each in 100 L water
simulating sprayer wash**

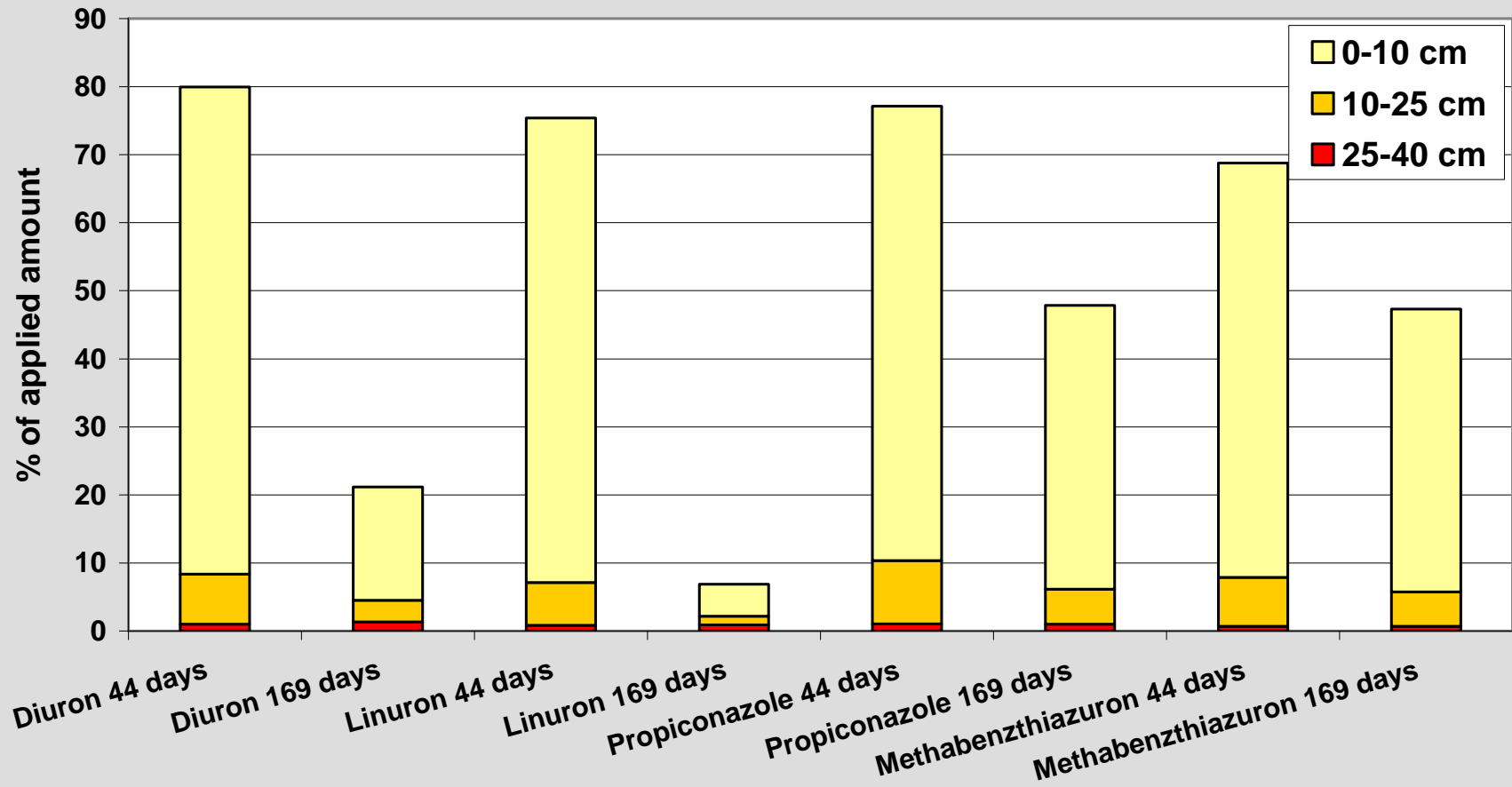
Results:



Pesticides in percolate – accumulated %



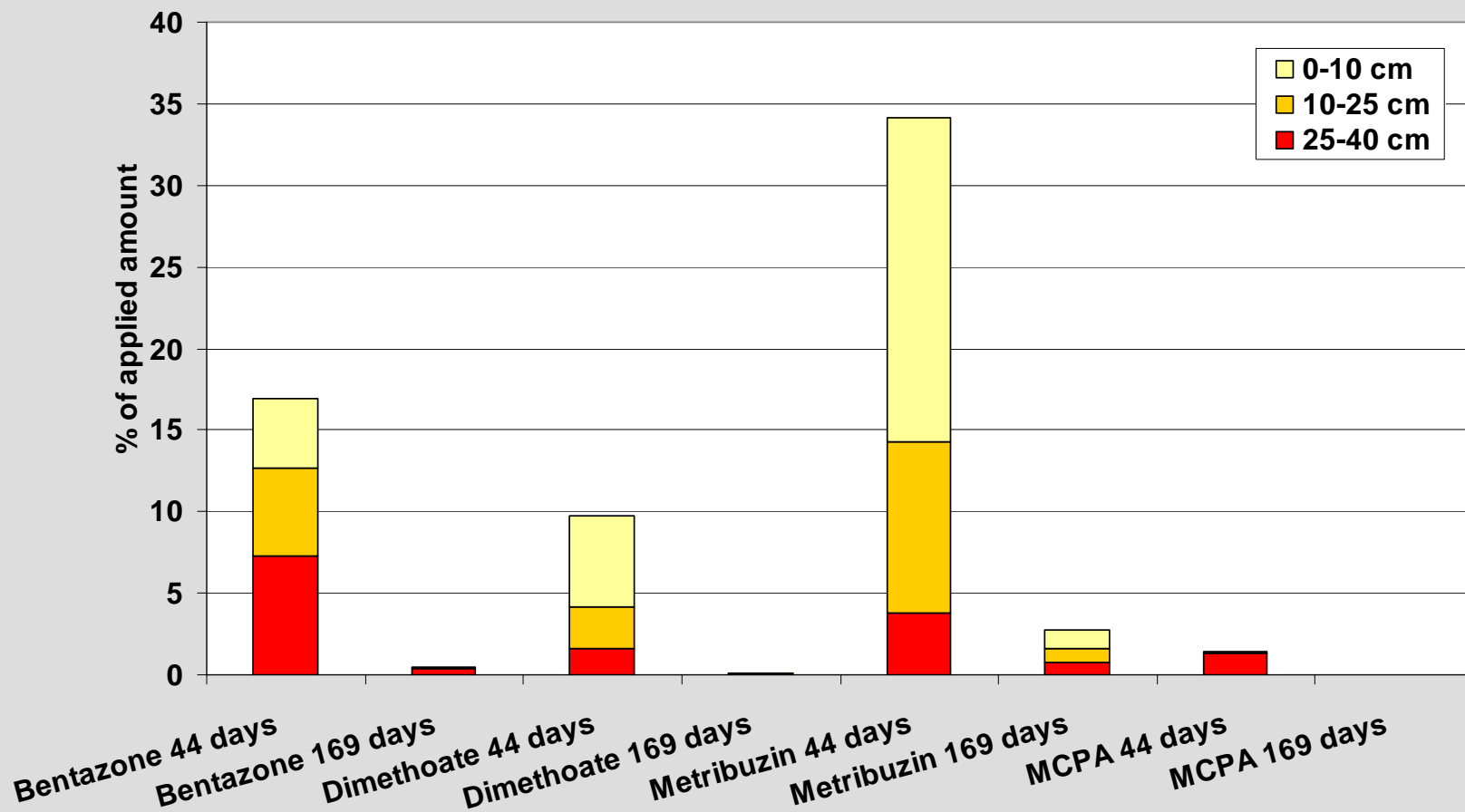
Results: Pesticide residues in soil in percentage of applied amount



Results:



Pesticide residues in biobed soil in percentage of added amount



Biobed conclusion – Danish studies



- The biobed material degraded the applied pesticides from 50% to more than 98% in 169 days.
- Most of the tested pesticides were retained in the biobed, but 11% of the applied bentazone was recovered in the percolate with max. conc. 445 µg/L.
- Other pesticides were recovered up to 2% in the percolate
- Danish EPA will not approve biobeds as installations for filling and cleaning of sprayers

Biofilter study: Installation



Axon Environment filter used for cleaning of diesel waste water.

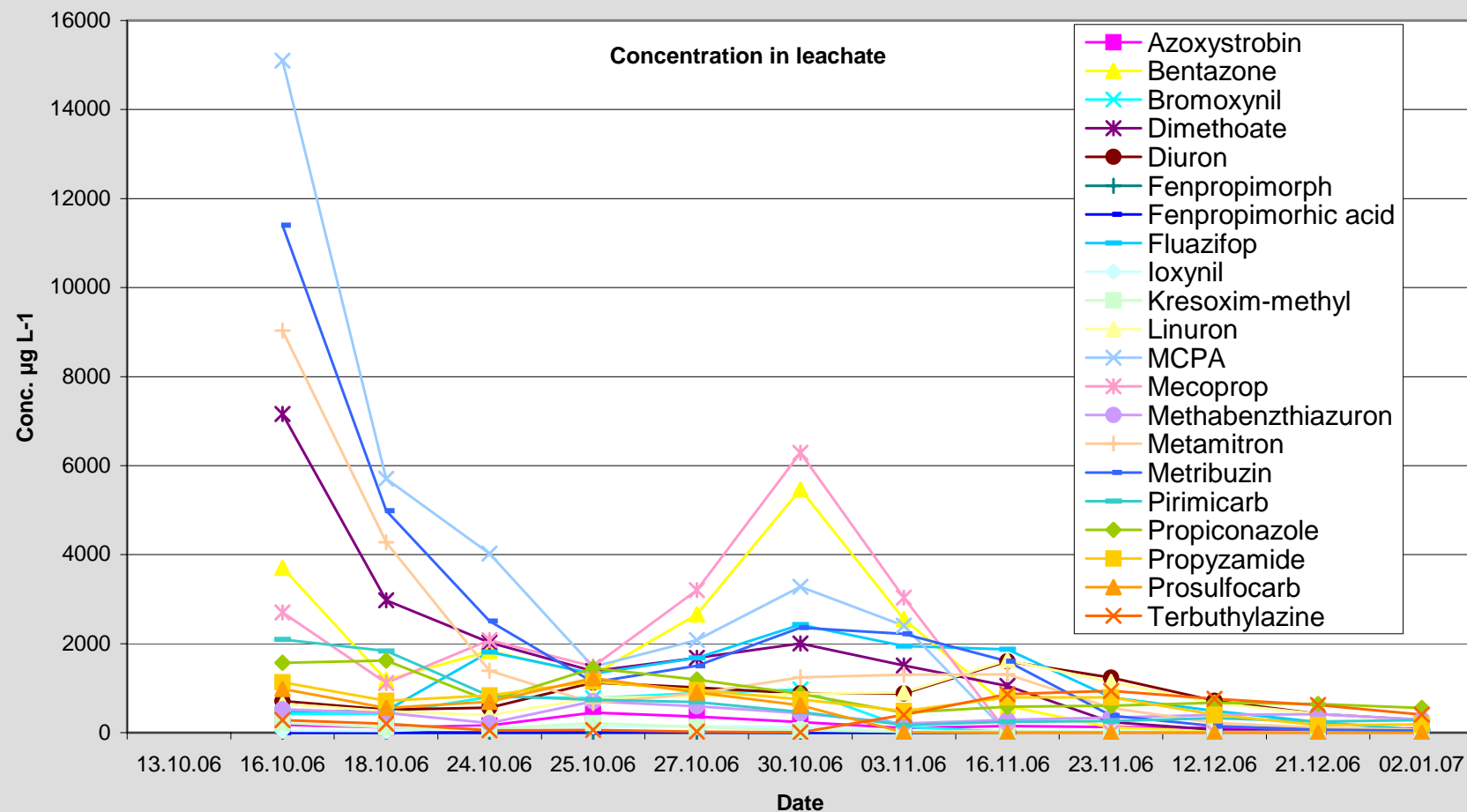


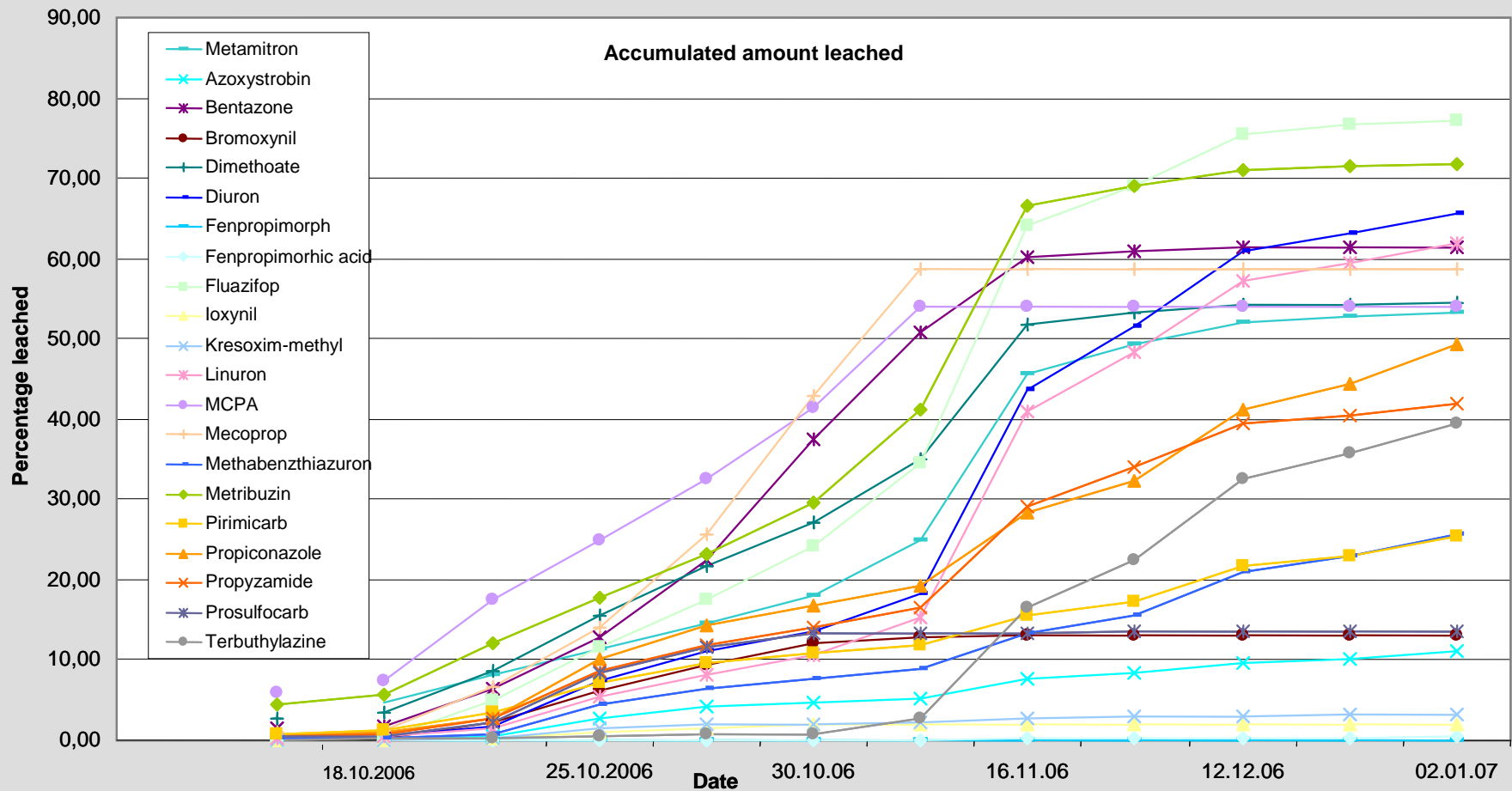
Application and irrigation





Results: Percolate concentration





Conclusion of Danish Biofilter study:

- Biofilter not as efficient as the biobed
- The problem is the high flow and increased speed of water from the cleaning site and through the biofilter column.



Commings Danish regulations: (In hearing from Danish EPA)



- Filling and cleaning of sprayers on paved surface with collection of waste water in manure- or other tight tank.
- Filling and cleaning of sprayers in the field – water has to be brought with the sprayer. New site at each occasion. At least 30 m to surface water, 300 m to well.
- Dilute 50 times before you get rid of last remnant in the tank.
- Biobeds or other solutions not allowed.

Time for questions



Research Centre Flakkebjerg