



Monika Jürgens*¹ (mdj@ceh.ac.uk), Andrew Johnson¹, John Crosse², Patrick Hamilton³, Kevin Jones²
¹UKCEH Wallingford, ²Lancaster University, ³Exeter University

The Fish Tissue Archive



NATIONAL FISH TISSUE ARCHIVE

The Environment Agency conducts annual fish counts in many English rivers. Normally all fish are returned once counted, but since 2007 we some receive roach (usually 10, about 15 cm long) from selected rivers for archiving and analysis.

COLLECTION



RECORDING



HOMOGENIZATION BY CRYOGRINDING



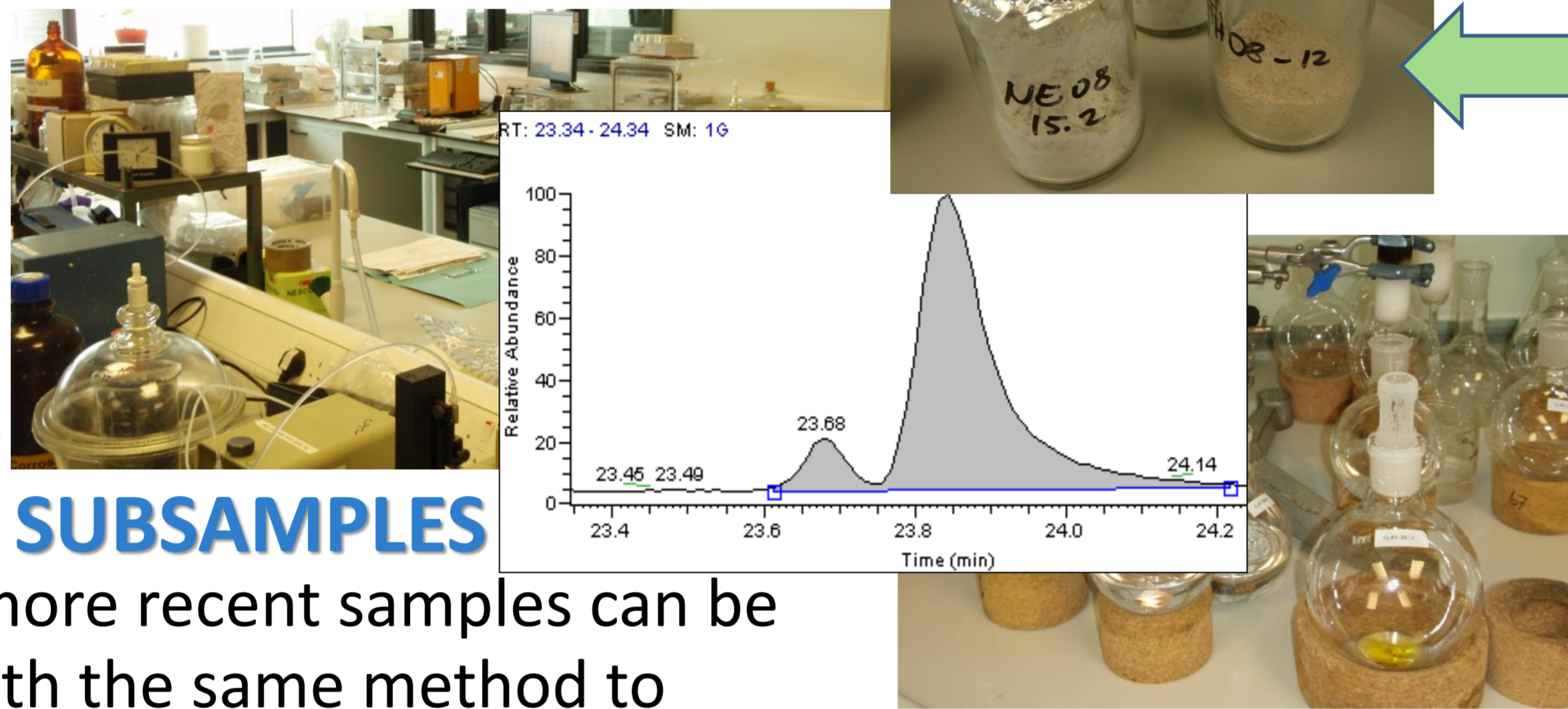
BOTTLED FROZEN FISH POWDER



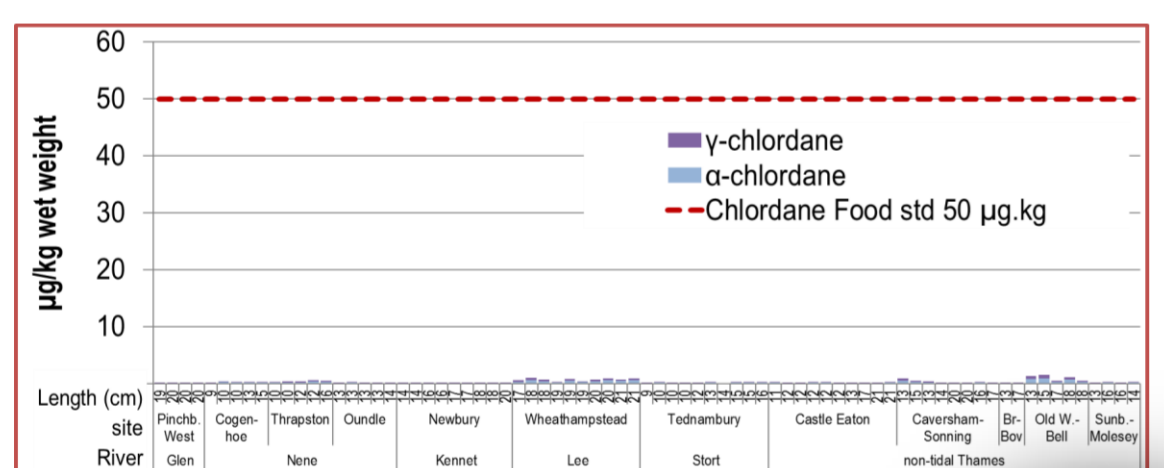
LONGTERM -80°C STORAGE WHOLE FISH OR POWDERED

ANALYSIS OF SOME SUBSAMPLES

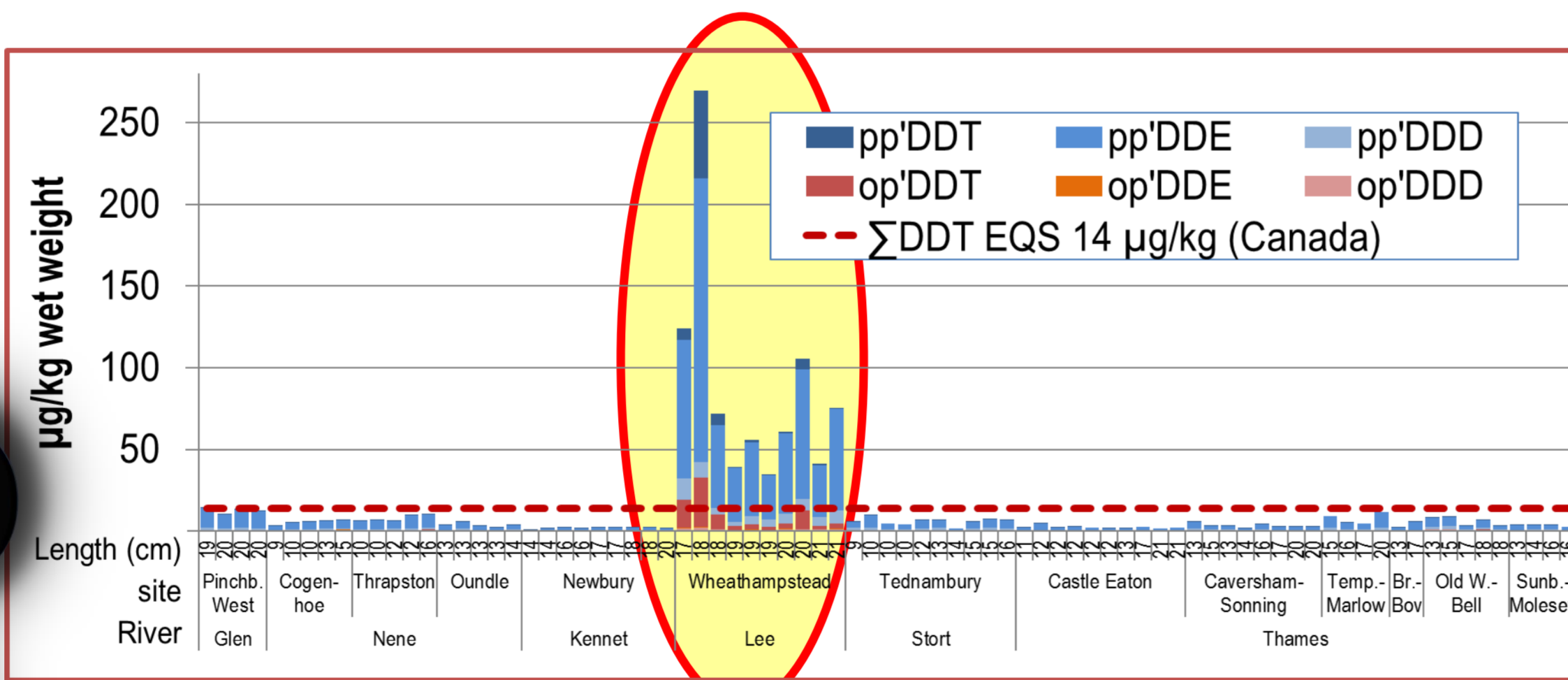
Older and more recent samples can be analysed with the same method to determine trends and their causes.



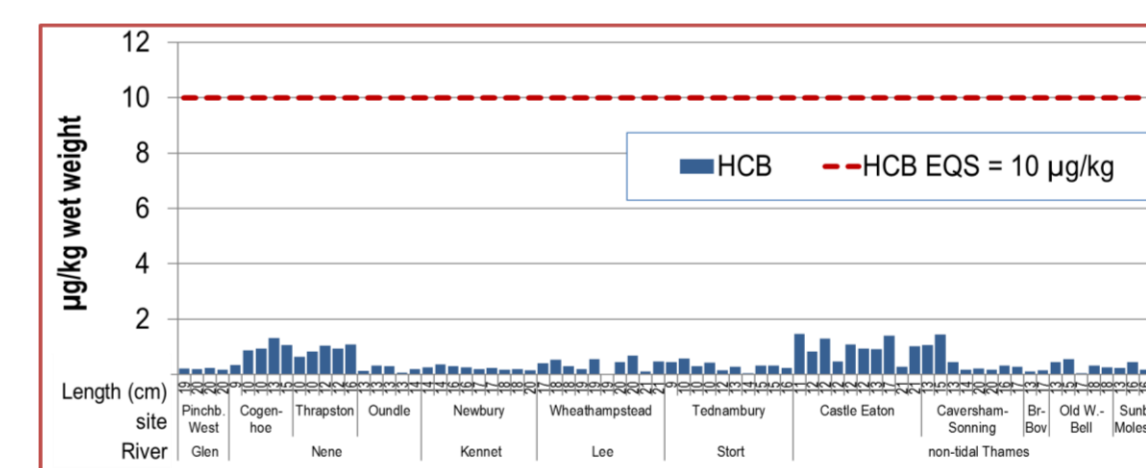
Some pesticide concentrations in roach caught between 2007 and 2012



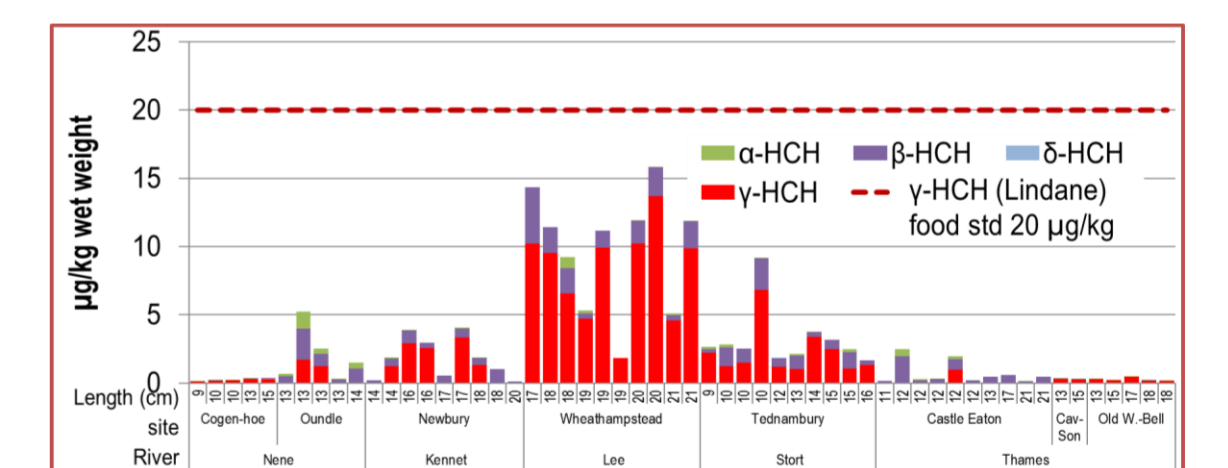
The insecticide chlordane was banned in the EU in 1981



The insecticide DDT was banned in 1981. Why is still so much DDT and its degradation products DDE and DDD found in 6-8 year old fish caught at one site in 2011?



Hexachlorobenzene (HCB), fungicide, has not been used in UK since 1975

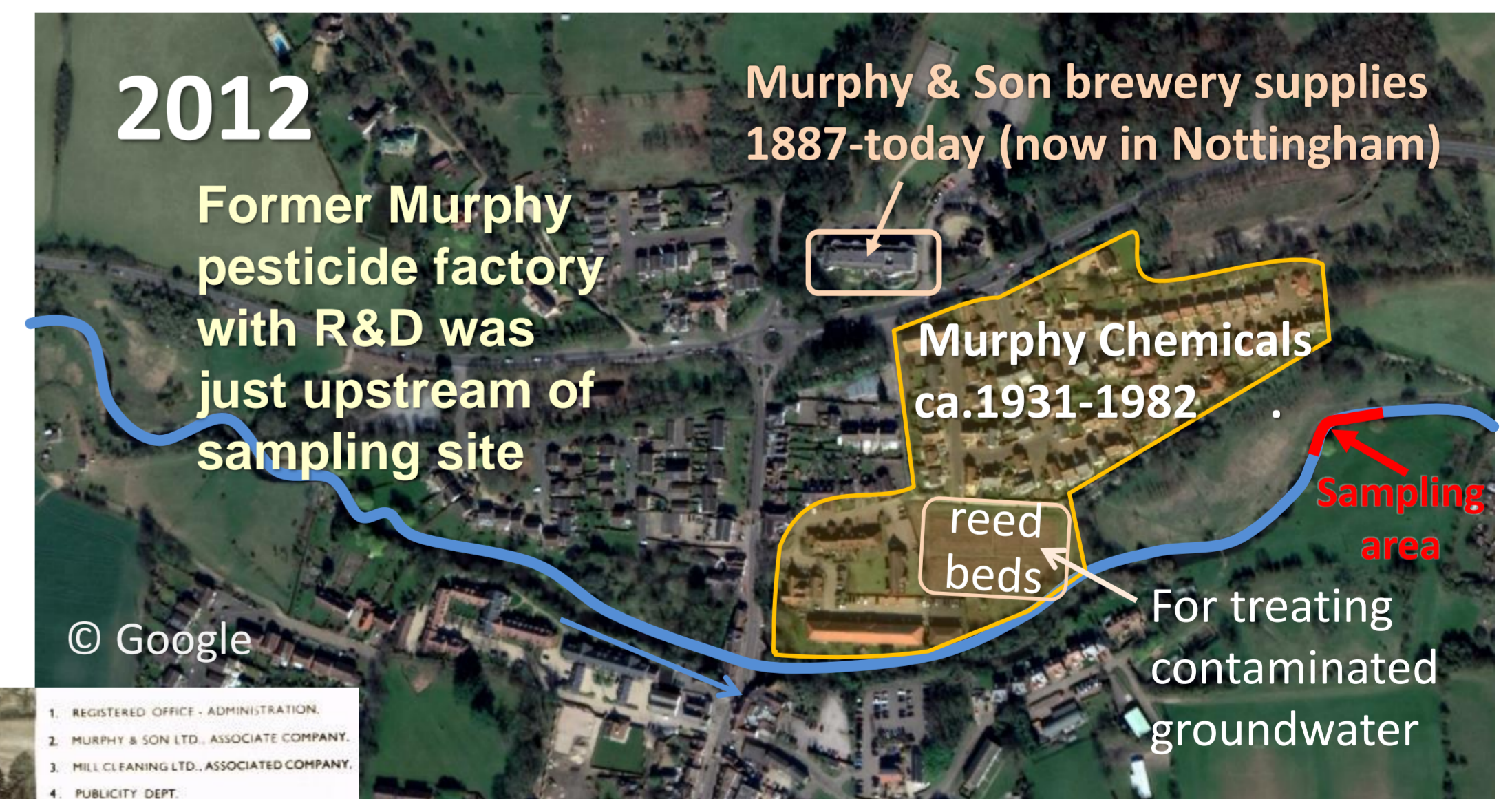


The insecticide Lindane (γ-HCH) was banned in 2002, the other congeners in 1981

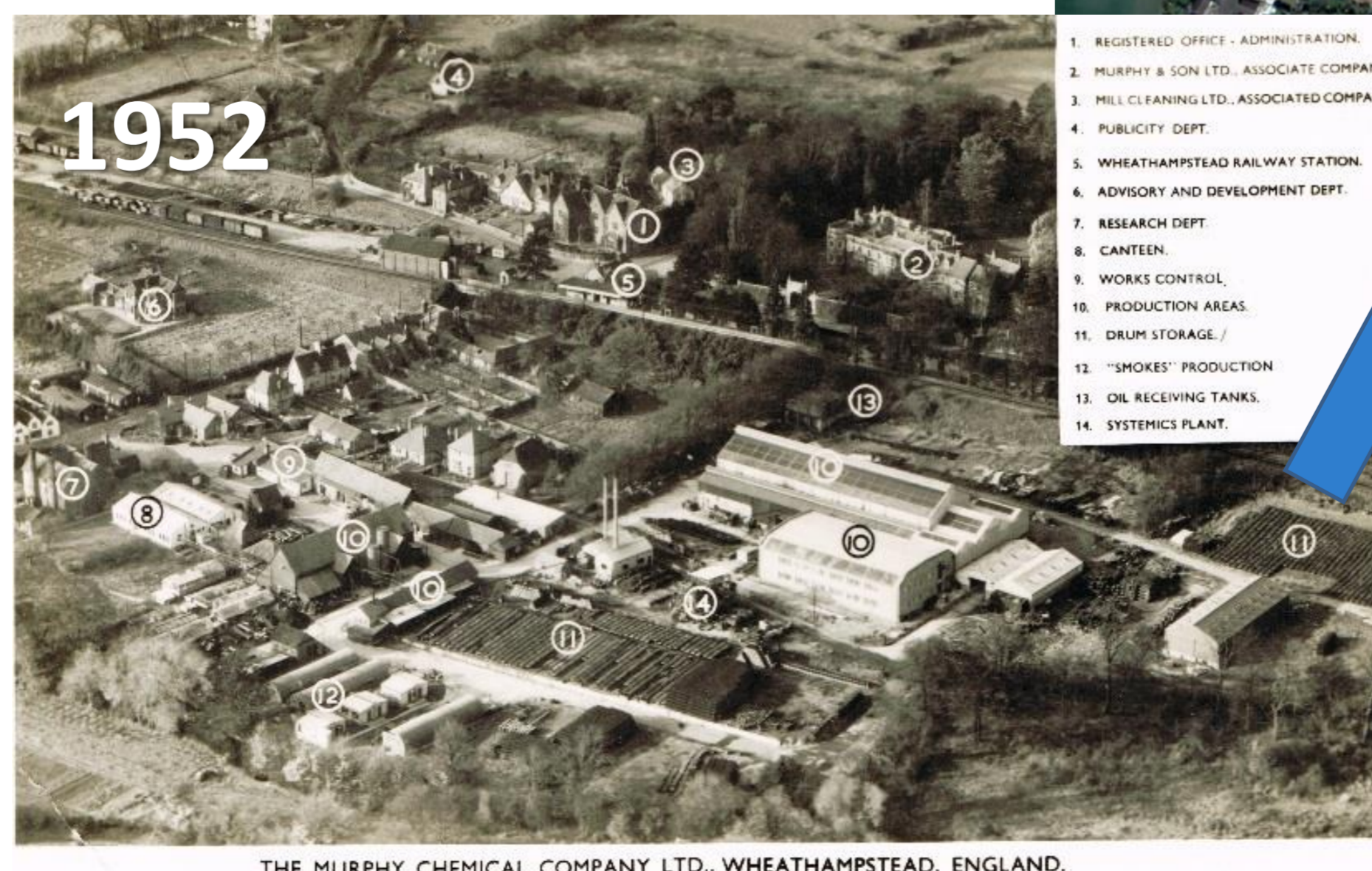
EQS - Environmental Quality Standard (EU, except for total DDTs where only Canada has an EQS). Food standards are for meat, because these pesticides don't have standards for fish



Did anyone mention **Wheathampstead** and **DDT** together before ?



A clue is found in the back of the 1946 edition of a book on plant pests



THE MURPHY CHEMICAL COMPANY LTD., WHEATHAMSTEAD, ENGLAND.

10.1016/j.chemosphere.2016.07.07
Jürgens et al. 2016



... and further research resulted in the picture clues above

WHY ARCHIVE FISH ?

BECAUSE TODAY'S SAMPLES CAN HELP ANSWER TOMORROW'S QUESTIONS