

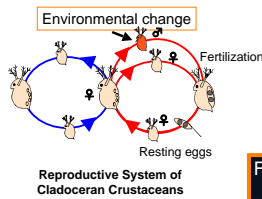
ExTEND2005における 無脊椎動物試験法開発について

H19 第1回 ExTEND2005 作用・影響評価検討会
07.11.06

(独) 国立環境研究所
鏑迫 典久

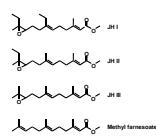
小型甲殻類オオミジンコにおける 幼若ホルモン様化学物質曝露によるオス仔虫生産誘導

Parthenogenesis Sexual reproduction

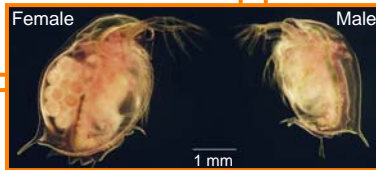
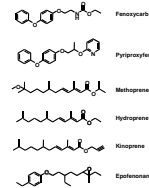


Juvenile hormones involved in sex determination of neonates by mothers?

Juvenile Hormones



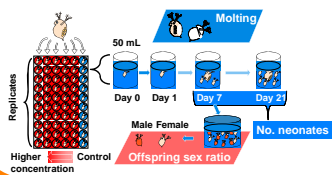
Juvenoid Insect Growth Regulators



Juvenile hormones and their analogs

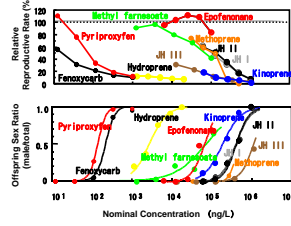
Enhancement of OECD TG 211

OECD TG 211 *Daphnia magna* reproduction test

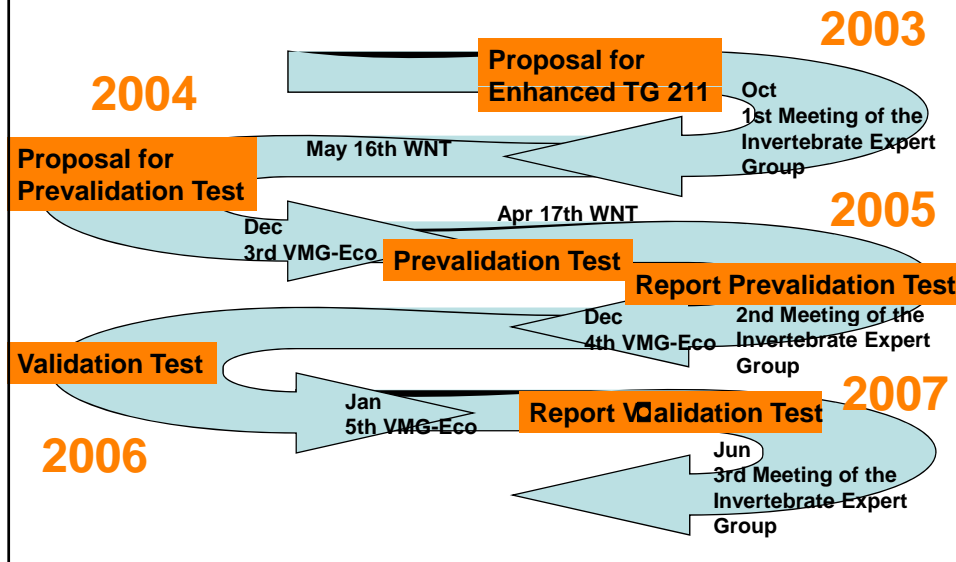


Reduction in reproductive rate

Induction of male neonates production



OECD Enhanced TG 211への 取り組み経緯概要



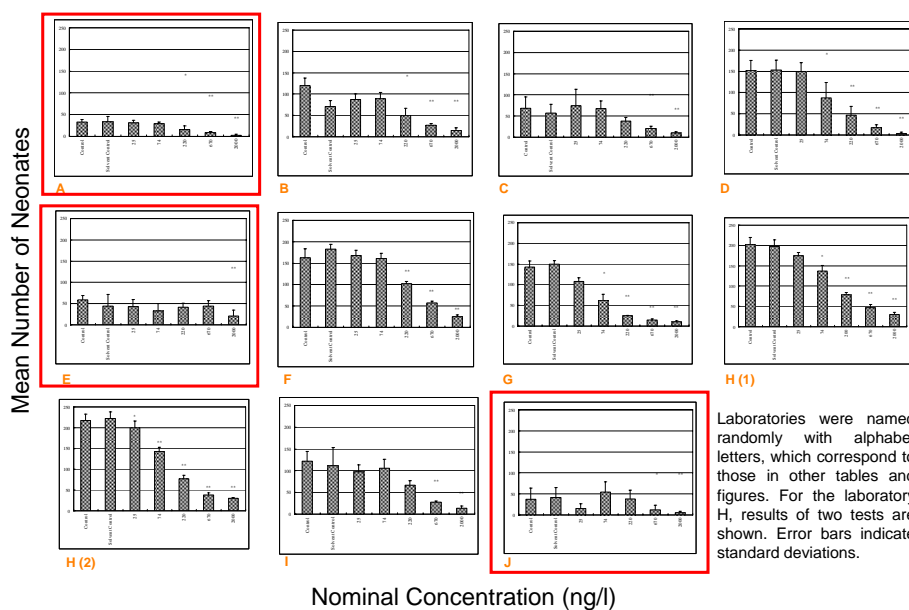
リングテスト参加研究機関

1. Finnish Environment Institute, [Finland](#)
2. French National Institute for Industrial Environment and Risks (INERIS), [France](#)
3. Laboratoire Ecotoxicité et Santé Environnementale (ESE) Equipe CNRS UMR, [France](#)
4. Aachen University, [Germany](#)
5. Bayer CropScience AG, [Germany](#)
6. Institute for Biological Analysis and Consulting (IBACON), [Germany](#)
7. UMWELTBUNDESAMT (UBA), [Germany](#)
8. Laboratory of Hydrobiology, [Hungary](#)
9. National Institute of Health, [Italy](#)
10. Agricultural Chemicals Inspection Station (ACIS), [Japan](#)
11. Kureha Special Laboratory, Co., Ltd., [Japan](#)
12. National Institute for Environmental Studies (NIES), [Japan](#)

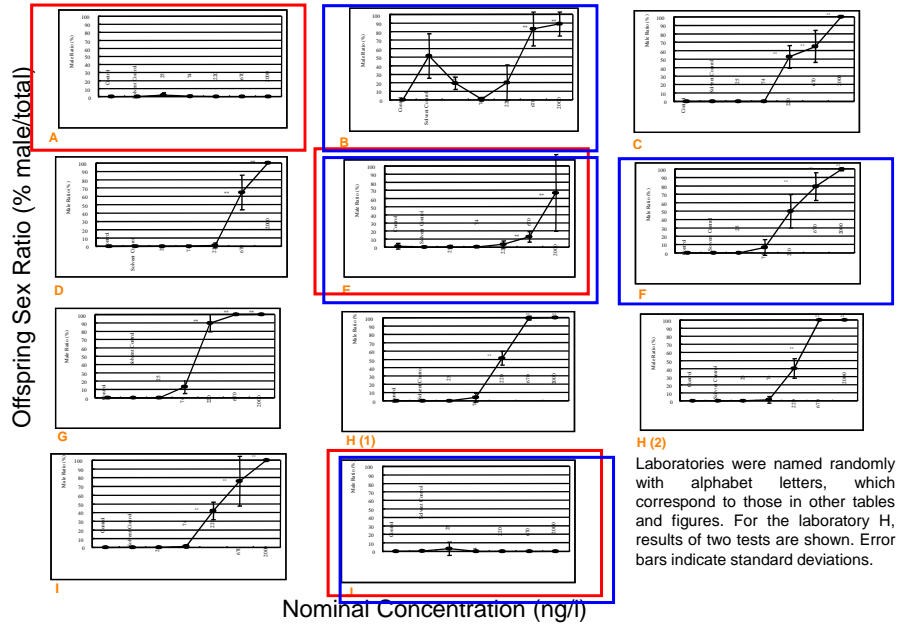
参加研究機関から送られたデータ

| Laboratory | Country | Pyriproxyfen | | 3,5-DCP | |
|---|---------|-------------------|-------------------|-------------------|---------------------|
| | | Reproduction Data | Chemical Analysis | Reproduction Data | Chemical Analysis |
| 1 Finnish Environment Institute | Finland | x | | x | |
| 2 French National Institute for Industrial Environment and Risks | France | x | x | x | x |
| 3 Laboratoire Ecotoxicité et Santé Environnementale Equipe CNRS UMR | France | No Data Available | | | |
| 4 Aachen University | Germany | x | | x | |
| 5 Bayer CropScience AG | Germany | x | | | |
| 6 Institute for Biological Analysis and Consulting | Germany | x | | x | Partially available |
| 7 UNWELTBUNDESAMT | Germany | x | x | | |
| 8 Laboratory of Hydrology | Hungary | x | | x | |
| 9 National Institute of Health | Italy | No Data Available | | | |
| 10 Agricultural Chemicals Inspection Station | Japan | x | | x | x |
| 11 Kureha Special Laboratory, Co., Ltd. | Japan | x | x | x | x |
| 12 National Institute for Environmental Studies | Japan | x | x | x | x |

総産仔数（ピリプロキシフェン）



仔虫性比 (ピリプロキシフェン)



2005-2007年のリングテスト活動状況

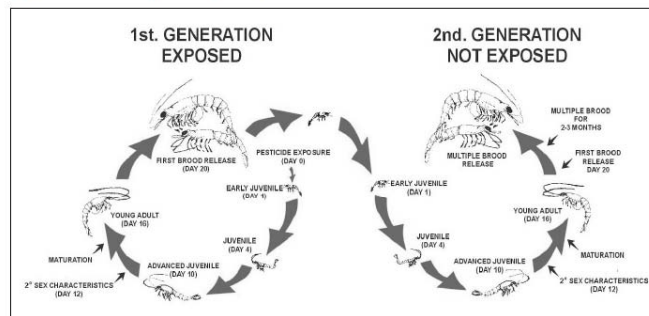
| Activity | 2005 | | 2006 | | | | | | | | | | 2007 | | | | | | | | |
|-----------------------------|------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|---|
| | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | |
| Send out invitation | x | | | | | | | | | | | | | | | | | | | | |
| Answer on invitation | | | x | | | | | | | | | | | | | | | | | | |
| Delivery of the NIES strain | | | | x | x | | | | | | | | | | | | | | | | |
| Delivery of ref substances | | | | | x | x | | | | | | | | | | | | | | | |
| Acclimatization of Daphnia | | | | | x | x | | | | | | | | | | | | | | | |
| Test (1 and 2) | | | | | | x | x | x | x | x | x | | | | | | | | | | |
| Sending data to NIES | | | | | | | | | | x | x | x | | | | | | | | | |
| Data analysis by JANUS | | | | | | | | | | | x | x | x | x | | | | | | | |
| Report to OECD (VMG-eco) | | | | | | | | | | | | | | x | x | | | | | | |
| Write a report (1st draft) | | | | | | | | | | | | | | x | x | x | x | x | x | x | x |

Overview of test substances and concentrations used in the (pre-validation studies on invertebrates tests in OECD

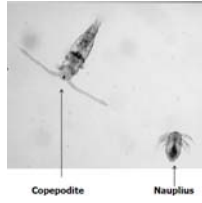
| Substances | Copepod | Mysids | Daphnids | Chironomids |
|--------------|---------------------------|--------------------------|----------------------------|-------------------------|
| Fipronil | | 1.0, 2.5, 6, 16, 40µg/L | | |
| Fenoxycarb | | 1.0, 2.5, 6, 16, 40µg/L | 0.37, 1.1, 3.3, 10µg/L | |
| 3,5-DCP | 5.6, 18, 56, 180, 560µg/L | 13, 32, 76, 200, 500µg/L | 12, 37, 110, 330, 1000µg/L | |
| Pyriproxyfen | | | 25, 74, 220, 670, 2000ng/L | 0.2, 0.8, 4, 12, 40µg/L |
| 3,4-DCA | | | 10, 20, 40, 80µg/L | |

Mysid two-generation toxicity test

- Past work- life cycle (with fipronil) and trans-generational (with methoprene) mysid studies



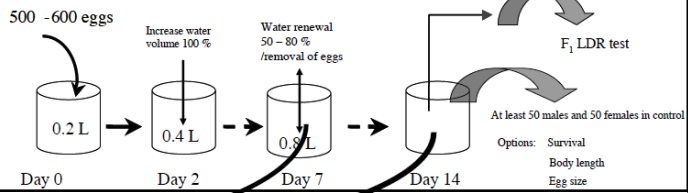
Life cycle test with *Acartia tonsa*



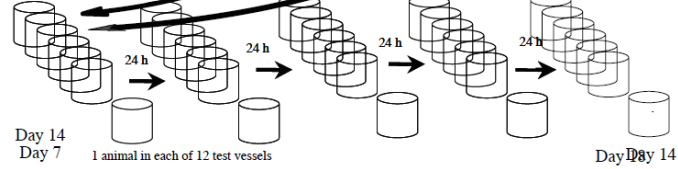
Copepodite

Nauplius

Basic long time exposure (d 0-14)



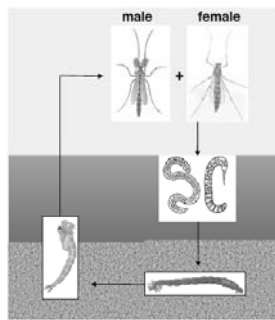
Egg production



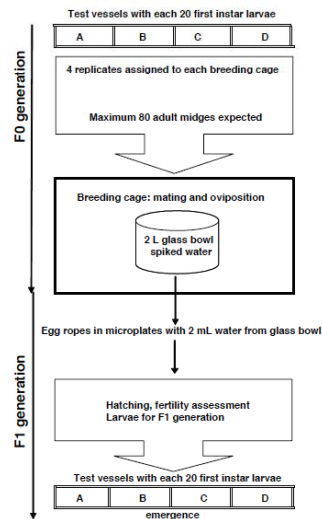
OECD invertebrate meeting Paris Nov 3-4 2005

Chironomid life-cycle test

-an extension of the chronic toxicity test according to OECD guideline 218/219



Experimental scheme for one replicate breeding cage of the life cycle test (2 cages per treatment)



今後の予定

- 平成20年1月開催のOECD第六回VMG-ecoおよび同時開催の第4回無脊椎専門家会合
- OECDおよびEPA（米国環境保護庁）との研究協力におけるミジンコ多世代試験の検討および実施
- 日米二国間協力実務者会議（平成20年2月予定）
- OECDへ提案中の他の無脊椎動物を用いた試験法との比較のためのデータ収集