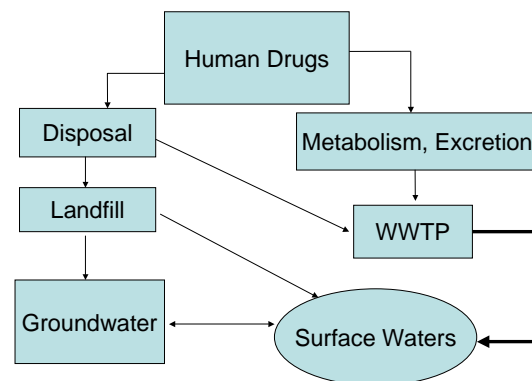


US EPA ARCHIVE DOCUMENT

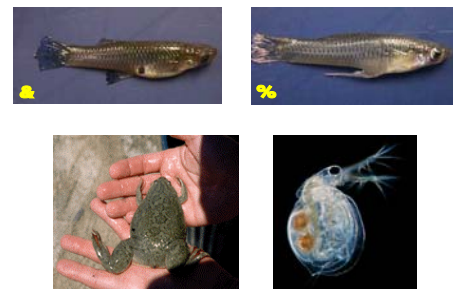
## The Environmental Issue

- Heavy use of human prescription and over the counter drugs
- SSRI antidepressants are widely prescribed
  - Prozac®, Zoloft®, Paxil®, Celexa®, Luvox®
  - Among the 200 most prescribed drugs  
— [www.Rxlist.com](http://www.Rxlist.com)
- Drugs and metabolites are excreted by humans
  - Enter sewers or septic tanks for treatment
  - Wastewater treatment may not degrade
  - May be released to aquatic environment
- Could SSRIs cause adverse effects in the aquatic environment?



## The Proposed Research

- Characterize degradation, fate of these drugs in the aquatic environment
- Measure acute and chronic impacts on aquatic organisms
  - Invertebrates (water flea), mosquito fish, frogs



## Toxicity Results

- Prozac has toxic effects in long-term exposures
  - Delayed development in fish
  - Altered behavior in fish and frogs
  - Delayed metamorphosis in frogs
  - Limb malformations in frogs
- Effects were measured at 0.6-100X the concentrations measured in streams



## Impact of EPA-Sponsored Research

- SSRIs have potential to impact aquatic organisms
- Need for effective removal of SSRIs and other drugs by wastewater treatment plants (WWTP)
- Future regulatory action may be warranted



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Control

Prozac