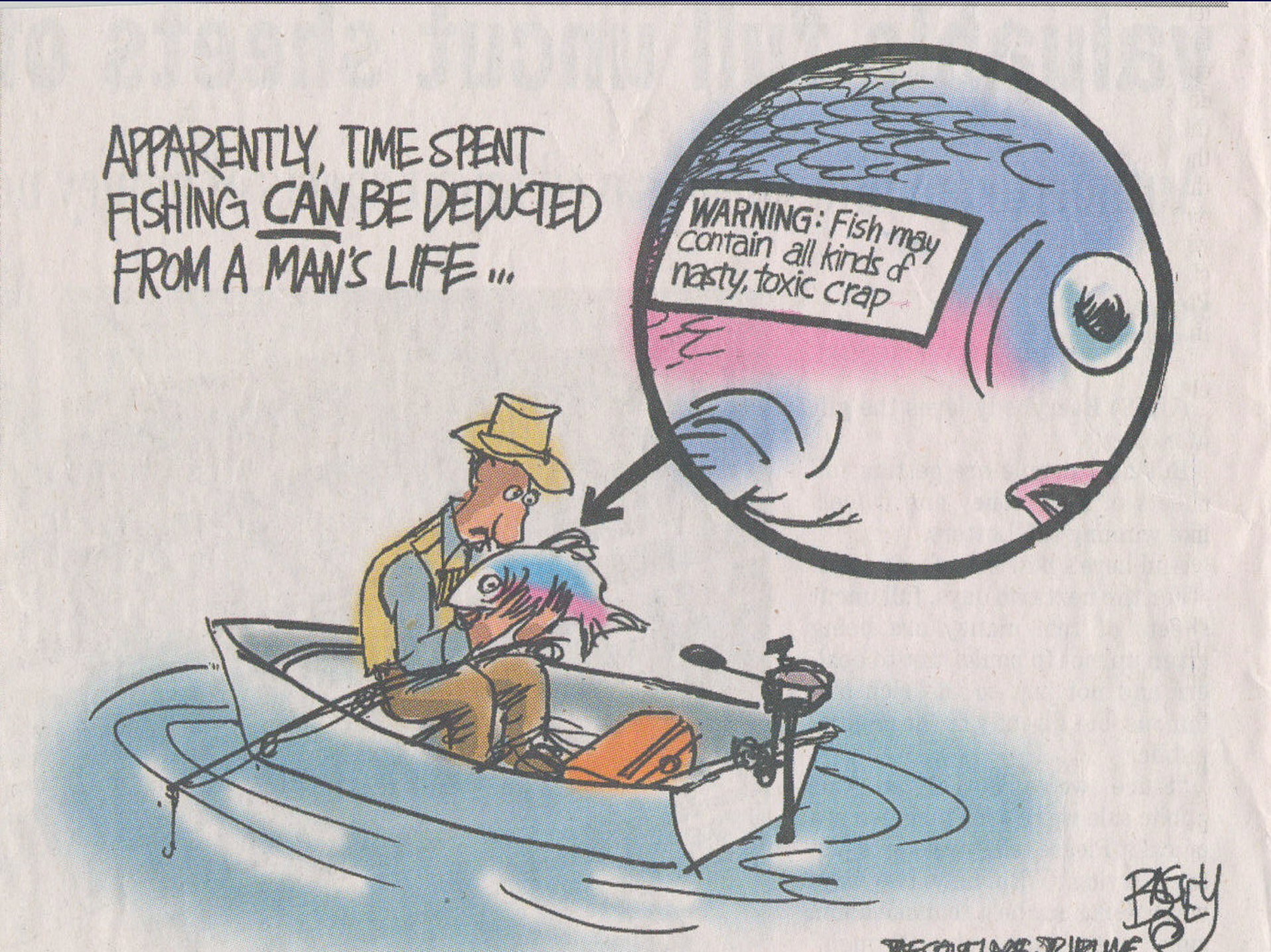
APPARENTLY, TIME SPENT FISHING CAN BE DEDUCTED FROM A MAN'S LIFE...
WARNING: Fish may contain all kinds of nasty, toxic crap

Methyl Mercury Criterion

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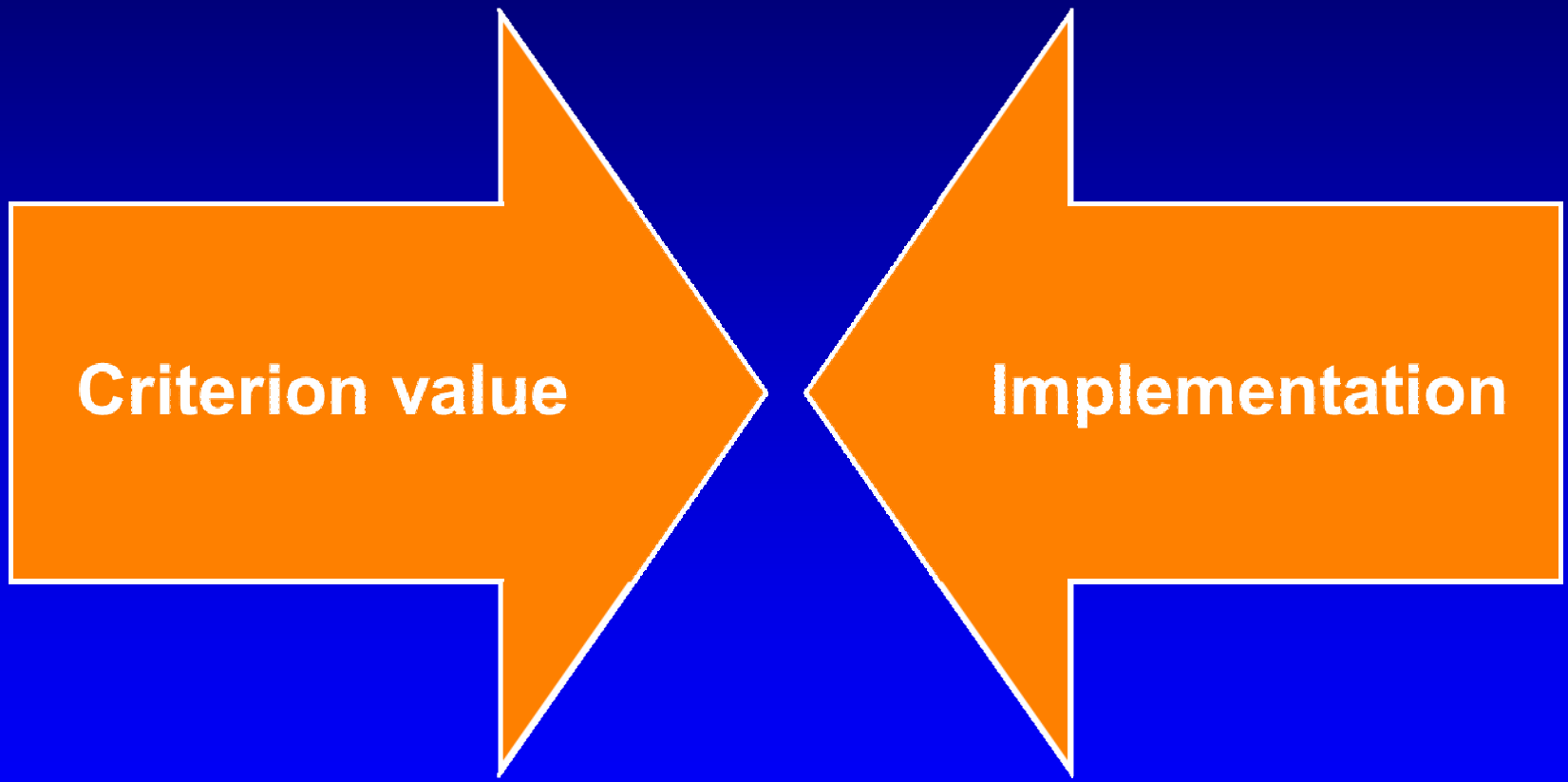
Issues for MeHg Criterion



EPA MeHg Criterion

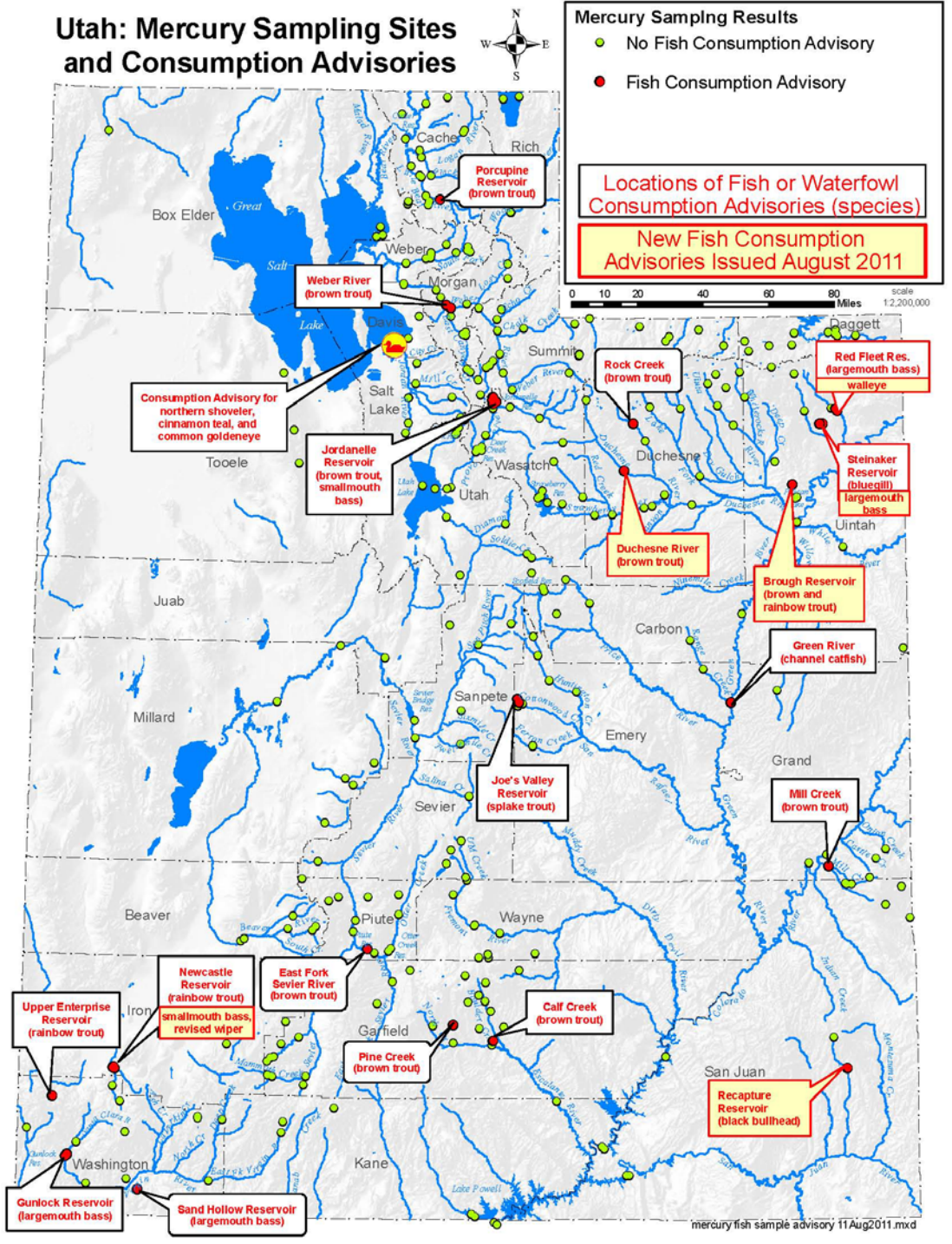
- EPA published MeHg criterion January, 2001
  - Based on human health
  - Criterion 0.3 mg/kg (ww) in fish
  - Challenges for applying tissue-based criterion to permit discharges
    - Understand how the criterion implemented before promulgating criterion

Existing Hg Water Criteria

- USEPA Hg criteria:
  - 1.4 µg/l acute (not recommended)
  - 0.77 µg/l chronic
- Utah
  - Human Health Table 2.14.6 references Table 2.14.2 Aquatic Life
    - Acute deleted 2012
    - 0.012 µg/l chronic

Utah Chronic Hg Water Criterion

- Based on a target concentration in fish of 1 mg/kg (FDA value)
- Derived using literature values estimating bioconcentration from water
- Current IR methods declare impairment at concentrations > 1 mg/kg
- Consumption advisory > 0.3 mg/kg


Utah: Mercury Sampling Sites and Consumption Advisories
Mercury Sampling Results
No Fish Consumption Advisory
Fish Consumption Advisory
Locations of Fish or Waterfowl Consumption Advisories (species)
New Fish Consumption Advisories Issued August 2011
0 10 20 40 60 80 Miles
scale 1:2,200,000
Porcupine Reservoir (brown trout)
Weber River (brown trout)
Consumption Advisory for northern shoveler, cinnamon teal, and common goldeneye
Jordanelle Reservoir (brown trout, smallmouth bass)
Rock Creek (brown trout)
Red Fleet Res. (largemouth bass) walleye
Steinaker Reservoir (bluegill) largemouth bass
Duchesne River (brown trout)
Brough Reservoir (brown and rainbow trout)
Green River (channel catfish)
Joe's Valley Reservoir (splake trout)
Mill Creek (brown trout)
Newcastle Reservoir (rainbow trout) smallmouth bass, revised wiper
East Fork Sevier River (brown trout)
Upper Enterprise Reservoir (rainbow trout)
Calf Creek (brown trout)
Pine Creek (brown trout)
Recapture Reservoir (black bullhead)
Gunlock Reservoir (largemouth bass)
Sand Hollow Reservoir (largemouth bass)
Box Elder
Cache
Rich
Weber
Morgan
Davis
Salt Lake
Summit
Daggett
Duchesne
Uintah
Wasatch
Utah
Tooele
Juab
Millard
Carbon
Emery
Grand
Sanpete
Sevier
Beaver
Piute
Wayne
Iron
Garfield
San Juan
Washington
Kane
mercury fish sample advisory 11Aug2011.mxd

Modification of EPA MeHg Criterion

- EPA recommendations for consumption rates (order of preference)
  1. Use local data when possible
  2. Use data reflecting similar geography or population groups
  3. Use data from national surveys
  4. Use EPA default intakes

Modification of EPA MeHg Criterion

- Relative Source Contribution (RSC)
  - Accounts for other exposure sources beside “recreational” fish, e.g., commercial fish
  - 99.9% other sources commercial fish
  - Utah-specific data unavailable and would need to be collected via surveys
  - Potential effect on criterion judged small

Modification of EPA MeHg Criterion

- Toxicity
  - Hg in tissue assumed 100 percent MeHg
    - Typically >90% MeHg in tissue but can be lower
    - Likely site- and species- specific
    - Limited utility for statewide criterion
  - Se:Hg antagonism
    - EPA position: antagonism uncertain

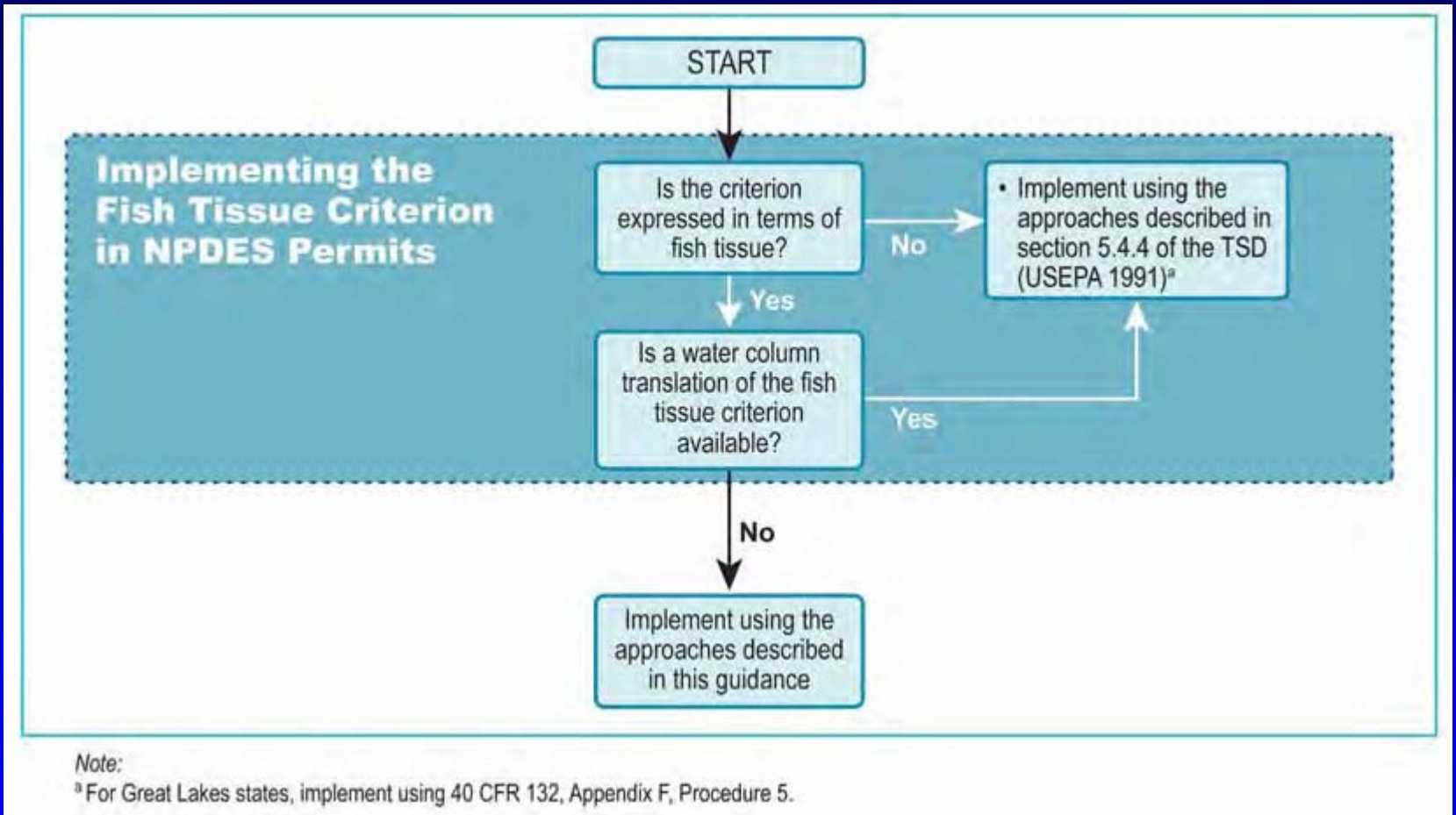
Waterfowl?

- Waterfowl consumption advisories for GSL
- Hg > 0.3 mg/kg
- Waterfowl exposures more difficult to relate back to specific waters
- GSL-specific issue

Implementation Issues

- Criterion based on MeHg
- Sources are not MeHg
  - Predominant source can be air deposition
  - Hg converted to MeHg by bacteria
  - Permit limits based on total Hg
  - Conversion rates to MeHg site-specific
  - Food web site-specific

UPDES Implementation

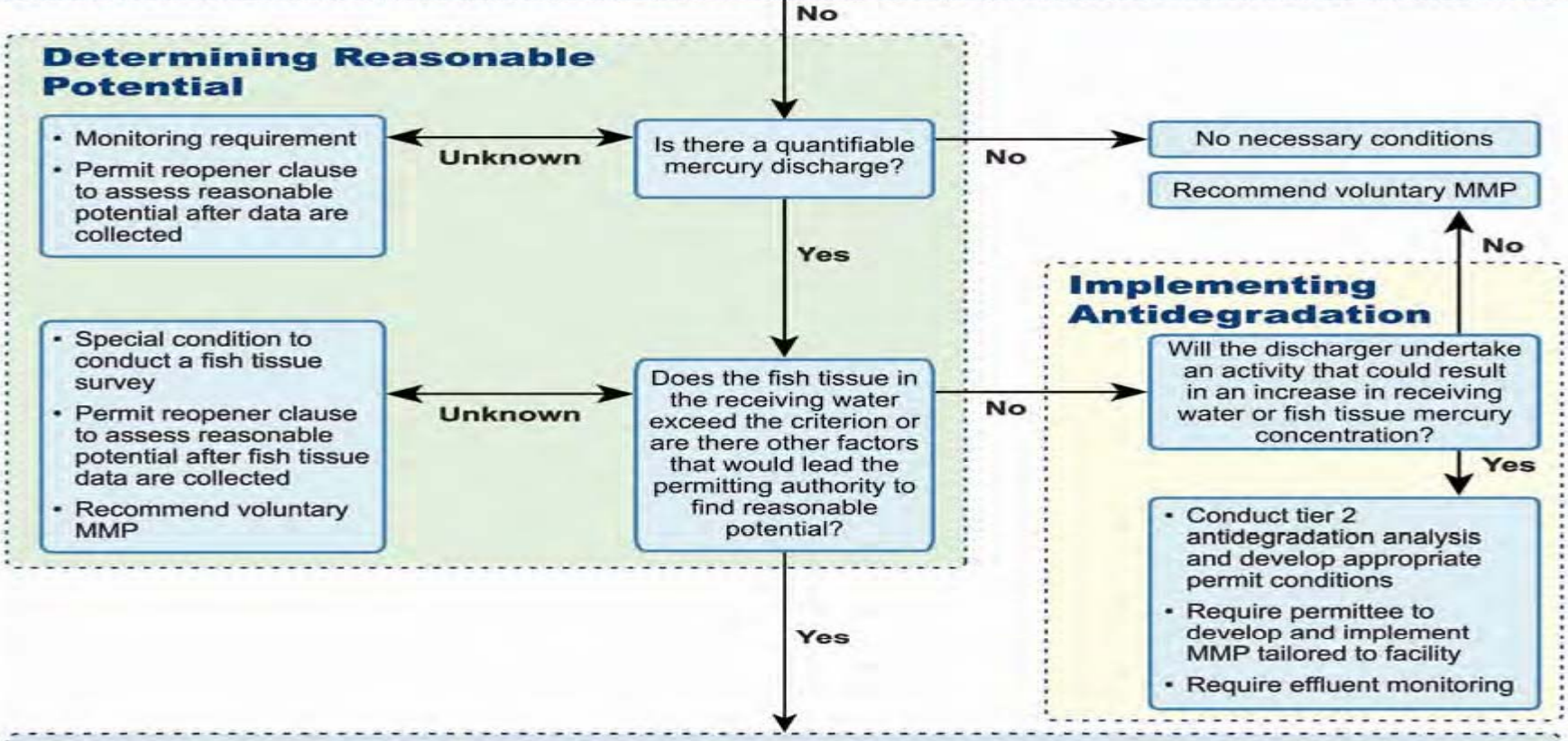


Note:

[a] For Great Lakes states, implement using 40 CFR 132, Appendix F, Procedure 5.

DWQ Proposed Approach

- Initial focus for translators on waters with UDPES municipal or industrial permits and fish advisories
  - Conduct sampling to establish site-specific BAF
  - Sampling Plan under development
    - Multiple sampling events water
    - Fish integrate exposure over time



Recommended WQBEL Requirements

- Where a TMDL has been developed, the WQBEL must be consistent with the wasteload allocation as required by 40 CFR 122.44(d)(1)(vii)(B))
- Where a TMDL has not been developed but a water column translation of the fish tissue criterion has been developed, include a numeric water quality-based limit
- Where a water column translation is not available and the permit writer determines that a numeric limit is infeasible to calculate:
  - Require the permittee to develop and implement an MMP tailored to the facility's potential to discharge mercury. Depending on the particular facts, the permitting authority may include in the MMP a trigger level, reduction goal, or enforceable numeric level to further manage mercury discharges
  - Require effluent monitoring using a sufficiently sensitive EPA-approved method to determine whether the MMP is effective (See sections 7.4 and 7.5.1.1 for more information on sufficiently sensitive methods)
  - Include a reopener clause to modify the permit conditions if the MMP is not found to be effective or if a water column translation of the fish tissue criterion is developed
- Where a discharger undertakes an activity that could increase mercury loading to the receiving water, it must be consistent with applicable antidegradation requirements. Additional requirements may also be necessary under the CWA and EPA's NPDES regulations.

Note:
[a] For Great Lakes states, implement using 40 CFR 132, Appendix F, Procedure 5.

Path Forward

- 2012 Collect samples to define BAF for waters with UDPES discharges and fish advisories
- Adopt MeHg Criterion
  - Modify EPA criterion?
- Follow EPA Implementation Guidance for UDPES permitting when translator unavailable
  - Dischargers will need to characterize Hg in effluent using more rigorous and expensive methods