

DONLIN, MERCURY, AND WHY IT MATTERS FOR FISH

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- ❖ Where mercury comes from
- ❖ Where mercury goes
- ❖ Mercury and fish

Where mercury comes from...

...IT'S IN THE ROCKS

- ❖ When metals like gold initially formed, mercury got mixed in with them.
- ❖ To get the gold, the rock needs to be crushed and heated in the processing plant

CAPTURED MERCURY



19 tons per year

11 tons per year

6 tons per year



Twin Creeks mine, NV

Photo: earthworks.org

Data source: FEIS 2.3.2.2.5

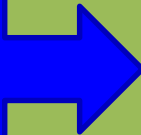
Where mercury goes...

...DOWN THE RIVER AND IN THE AIR

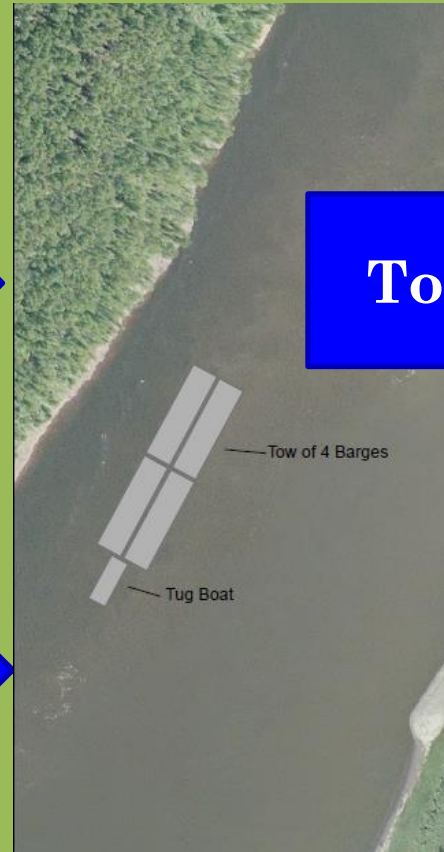
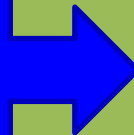
DOWN THE RIVER



**11 tons
per
year**



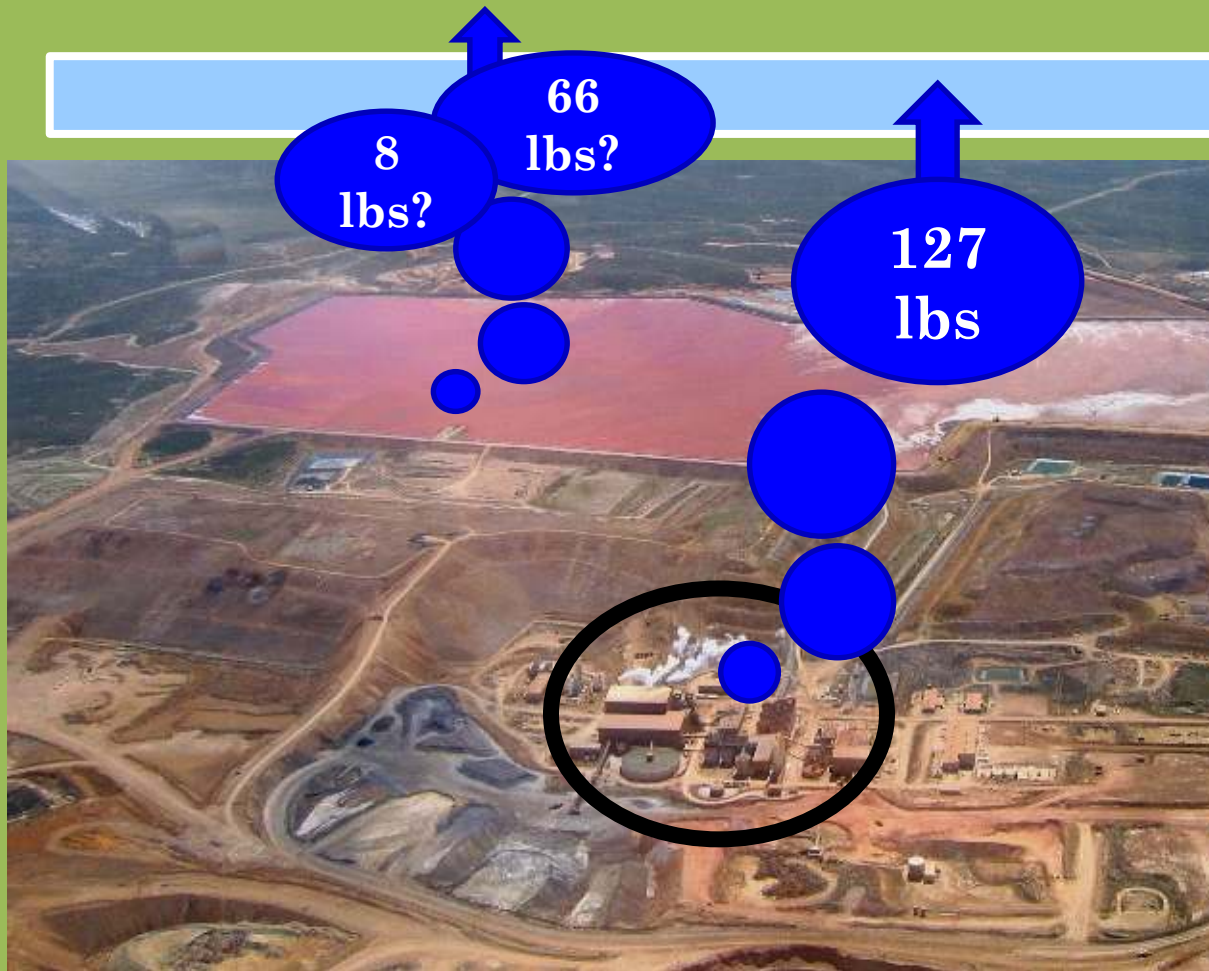
**6 tons
per
year**



To?

**Pennsylvania
and
Canada?**

IN THE AIR



Estimated emissions of mercury each year (at 99% capture in plant)

The entire state of Alaska released 43 lbs of mercury to air in ten years (2010-2019)

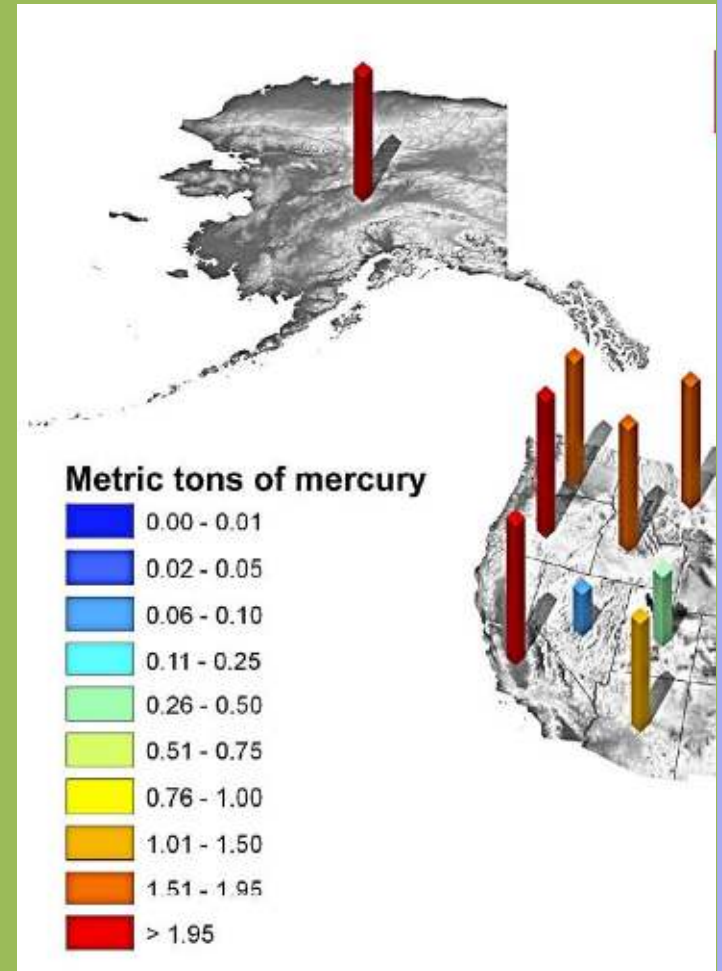
Twin Creeks mine, NV

Photo: earthworks.org

No mine is an island

MORE SOURCES

- historical mines leak mercury
- wildfire releases mercury
- melting permafrost releases mercury



Mercury and fish

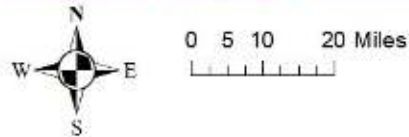
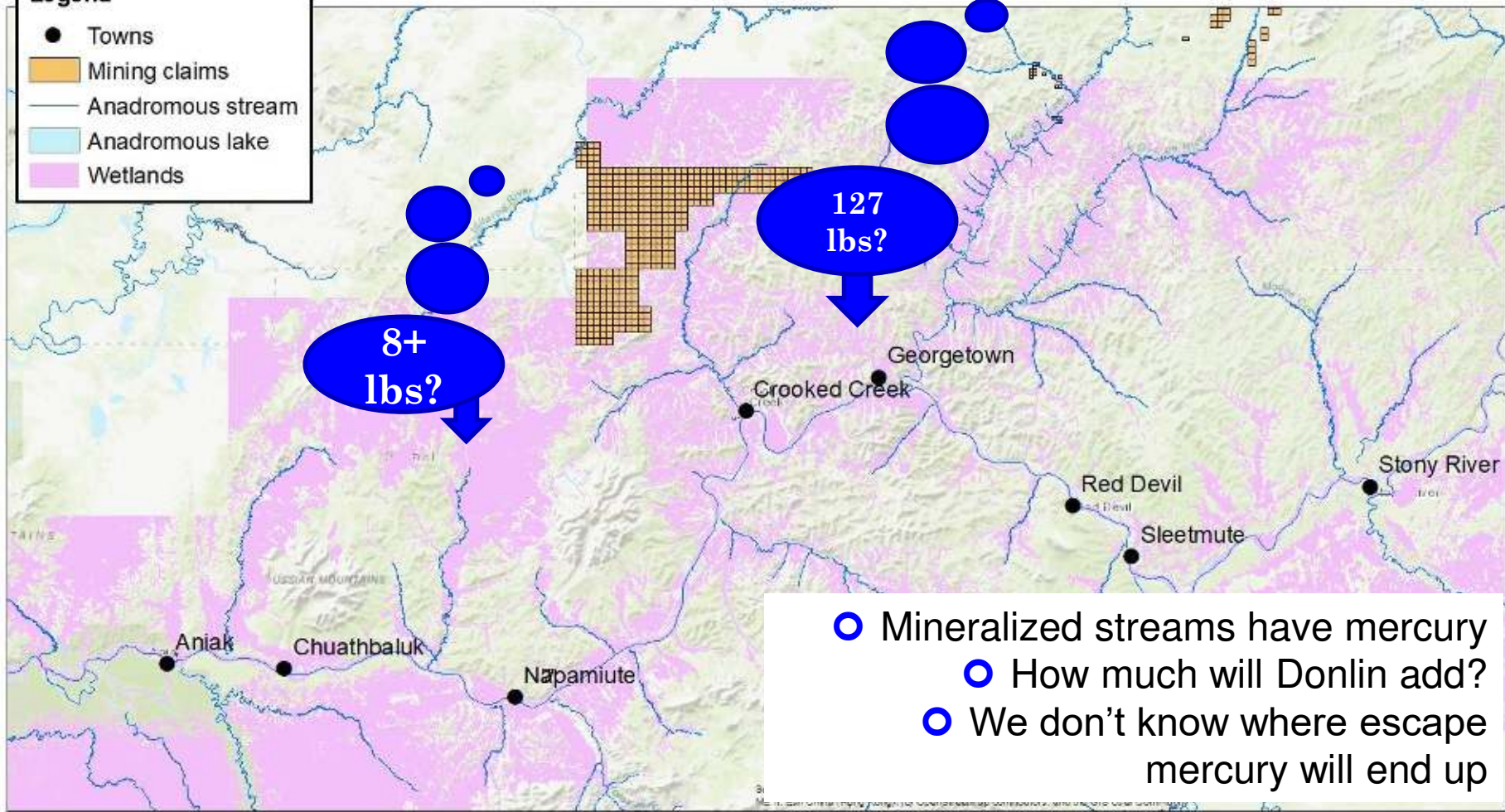
METHYLATION

- Mercury does not become an issue unless it methylates
- More methylation at wetlands and slow-moving water in mucky areas with high dissolved carbon
- Less to none in clear, fast, oxygenated streams
- None if mercury deposits on bare ground, rocks.

Wetlands and anadromous waters near Donlin prospect

Legend

- Towns
- Mining claims
- Anadromous stream
- Anadromous lake
- Wetlands



- Mineralized streams have mercury
- How much will Donlin add?
- We don't know where escape mercury will end up

BIOACCUMULATION

- Top predators on long food chains accumulate mercury
- Fish (and people) do get rid of mercury naturally
- Toxicity occurs when mercury comes in faster than it leaves

- Pike, burbot, trout, sheefish may have high mercury
- Salmon do not

More information at <https://dec.alaska.gov/eh/vet/fish-monitoring-program/fish-monitoring-map.aspx>

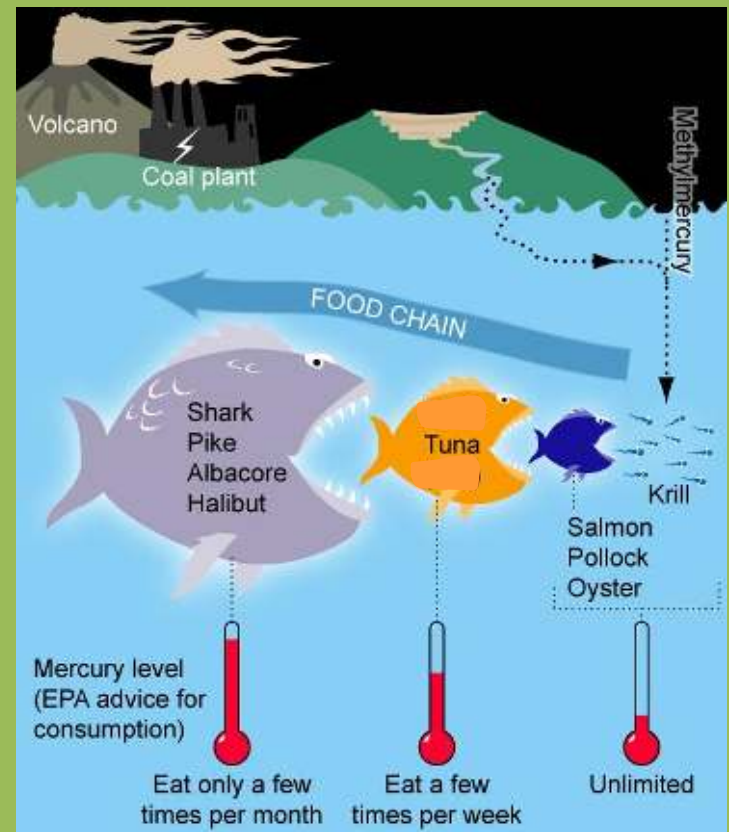
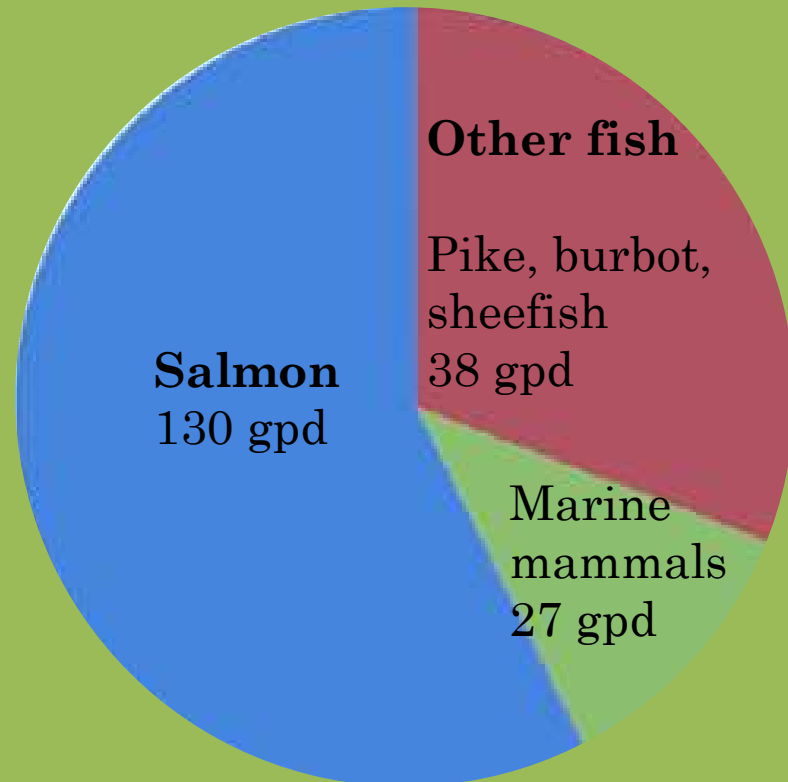


Image: groundtruthtrekking.org

HOW MUCH FISH IS EATEN?

- Toxicity occurs when mercury comes in faster than it leaves



Data source: <http://dec.alaska.gov/water/water-quality/human-health-criteria/>

Summary

- There are many sources of mercury.
- Donlin will release mercury from the processing plant to air. Even capturing 99% of it still allows a lot to escape – but we don't know where it will land.
- Toxicity occurs if mercury lands on wetlands and moves into fish faster than it leaves fish. This only occurs in a very few species.

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