Mercury Contamination in Women and Children from the Arctic to Cook Islands: IPEN Raises Alarm and Requires Action

Dena'inaq ełnen'aq' gheshtnu ch'q'u yeshdu. (Dena'ina)
I live and work on the land of the Dena'ina. (English)

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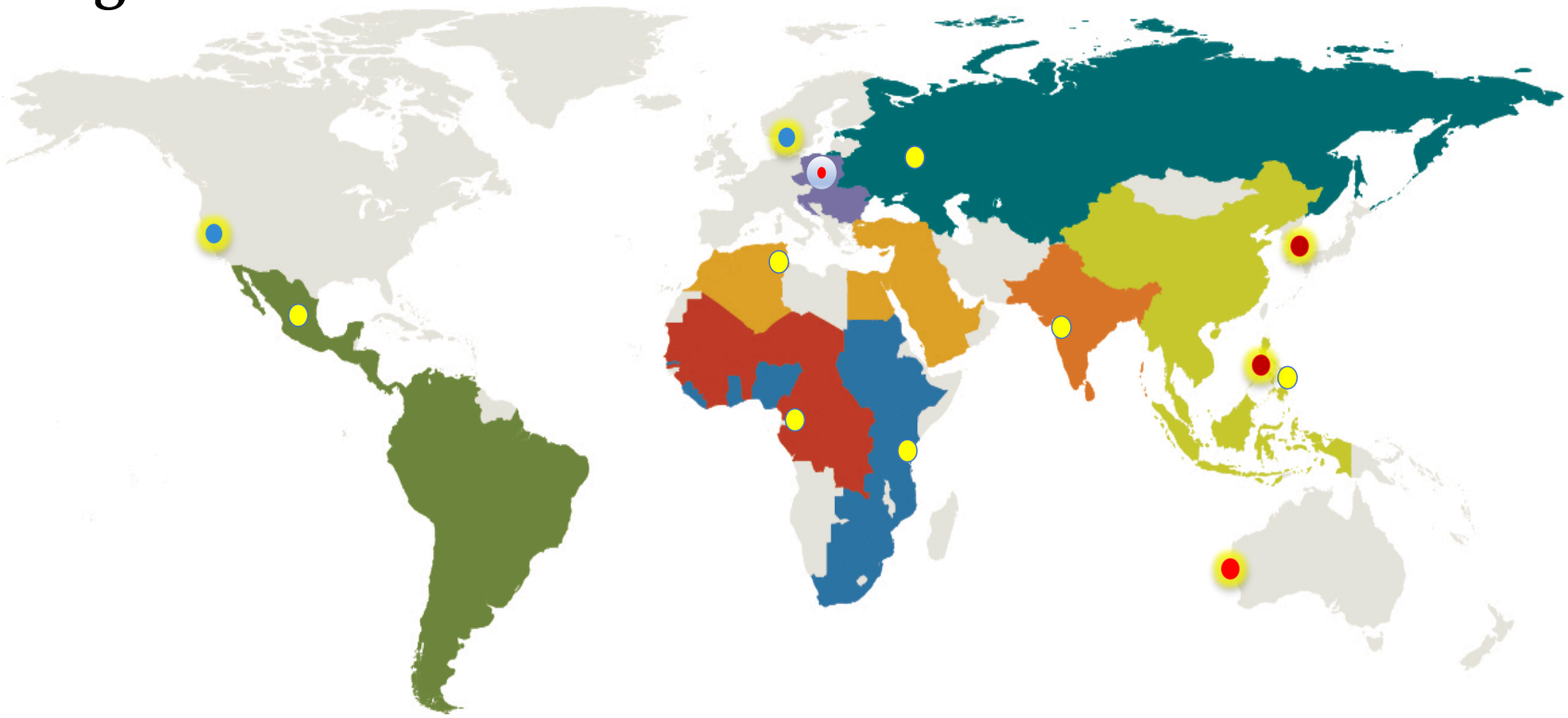
***I**nternational*
***P**ollutants*
***E**limination*
***N**etwork*

IPEN Network Today

550+ IPEN Participating Organizations
124 Countries
8 Regional Hubs



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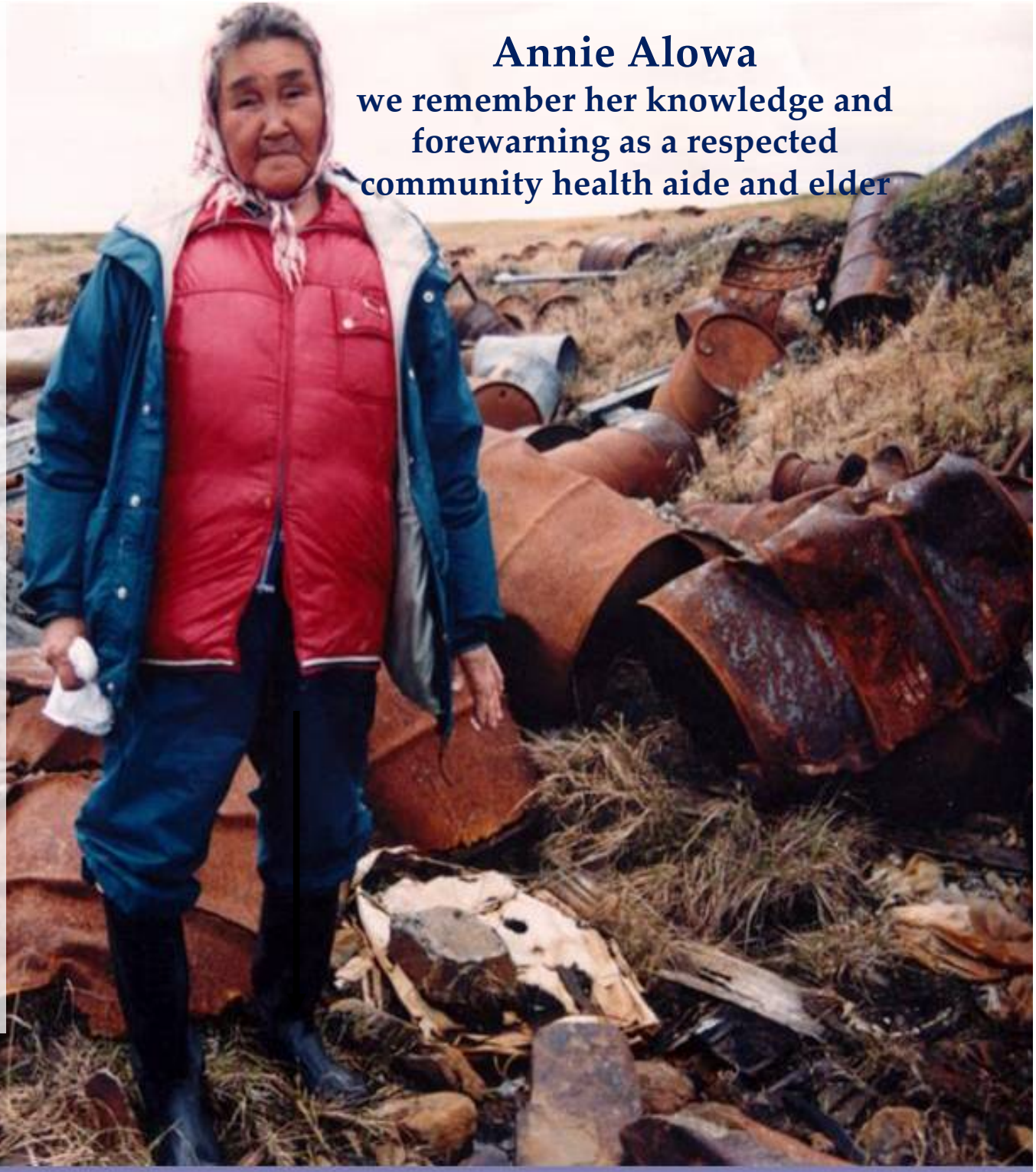
Our mission:

To assure justice by advocating for environmental and community health. We believe everyone has a right to clean air, clean water, and toxic-free food.




- She was a keen and trained observer about the health of her people
- She observed higher rates of cancers among the people whose families lived and worked at Northeast Cape
- She witnessed miscarriages and low birth weight babies, especially among those families closely associated with Northeast Cape
- She inspires our work everyday!



Annie Alowa

we remember her knowledge and forewarning as a respected community health aide and elder

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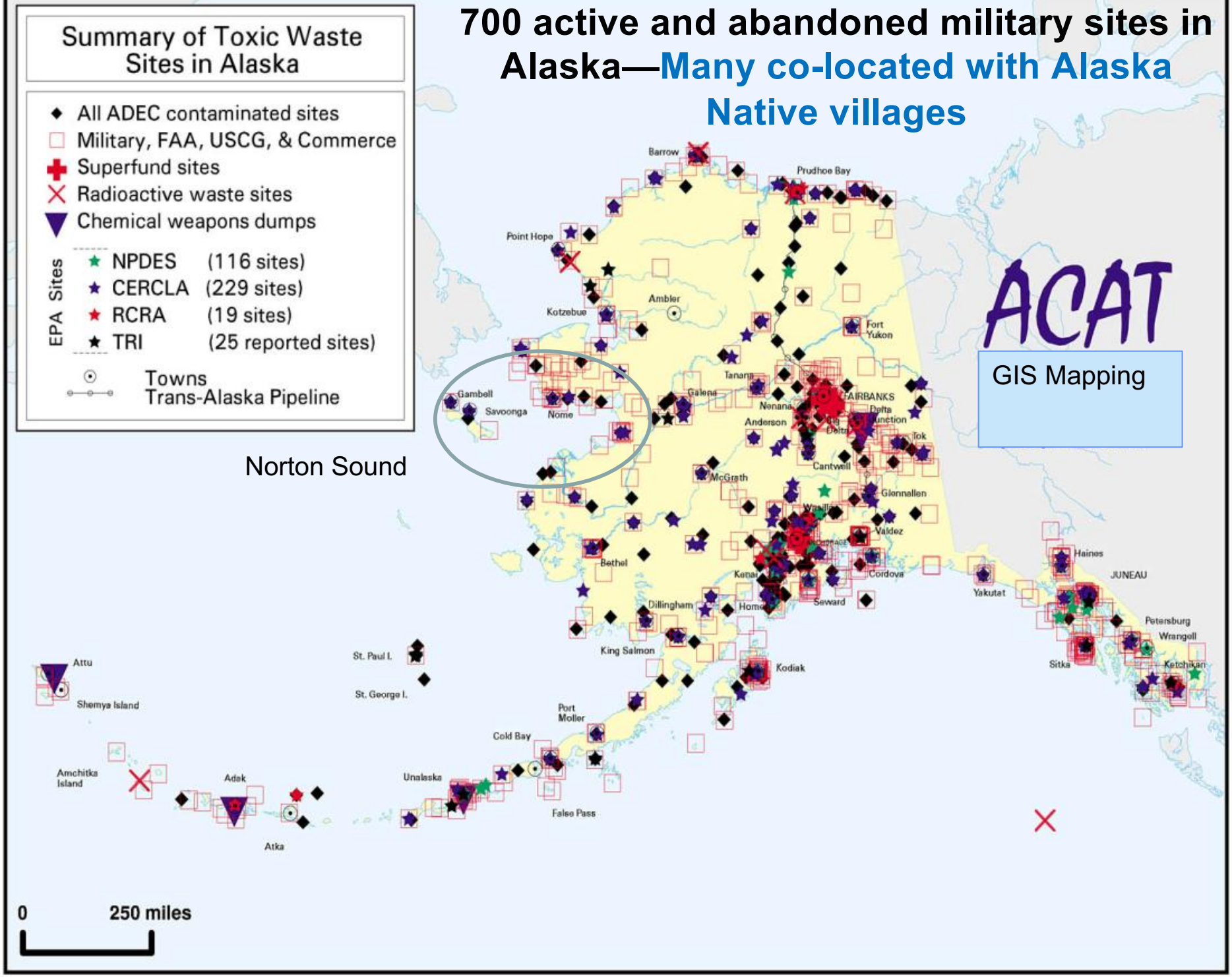
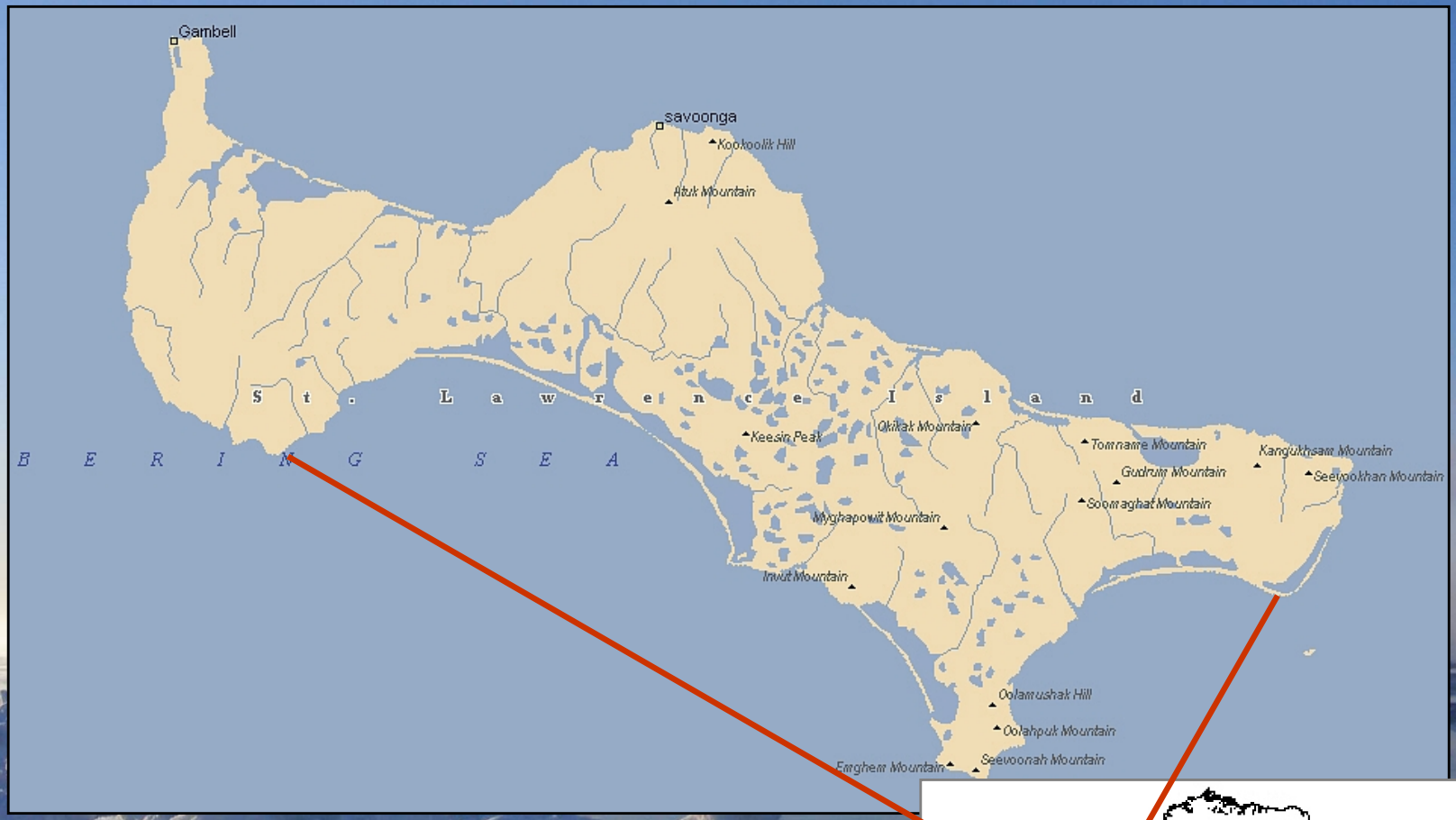
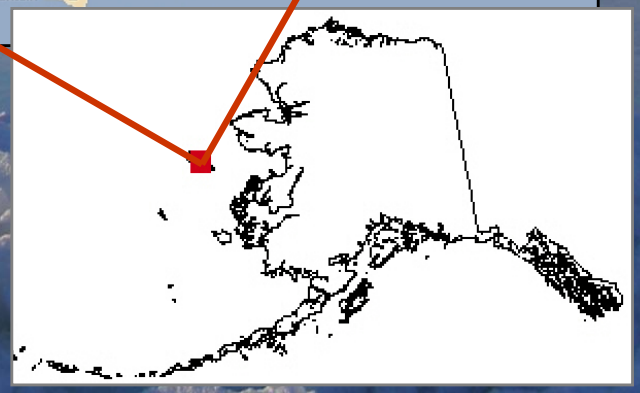
700 active and abandoned military sites in Alaska—Many co-located with Alaska Native villages



Where is Sivuqaq (St. Lawrence Island)?

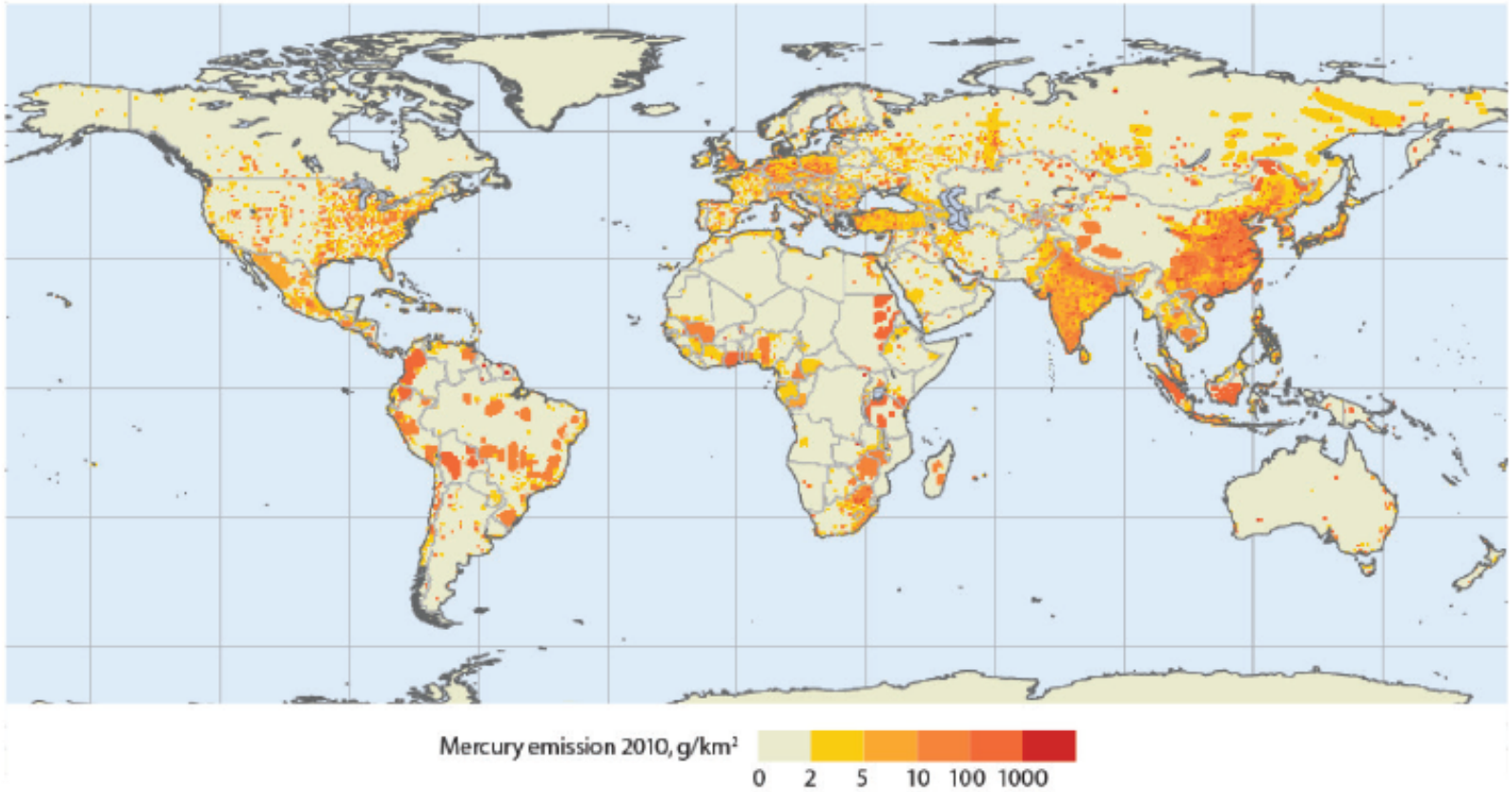


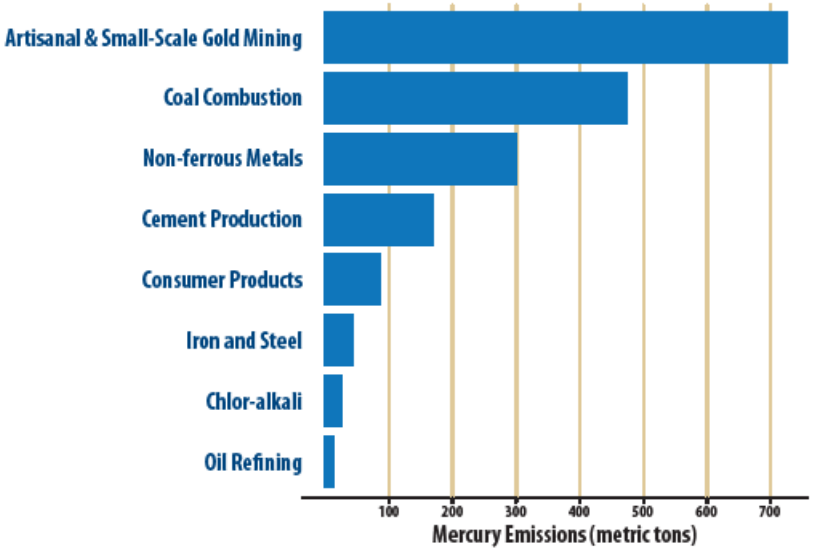


Located in the Northern Bering Sea

2010 map of the global distribution of mercury emissions to air due to human activity shows the heavy emissions from coal fired power plant activity most heavily concentrated in South East Asia, India, and China.

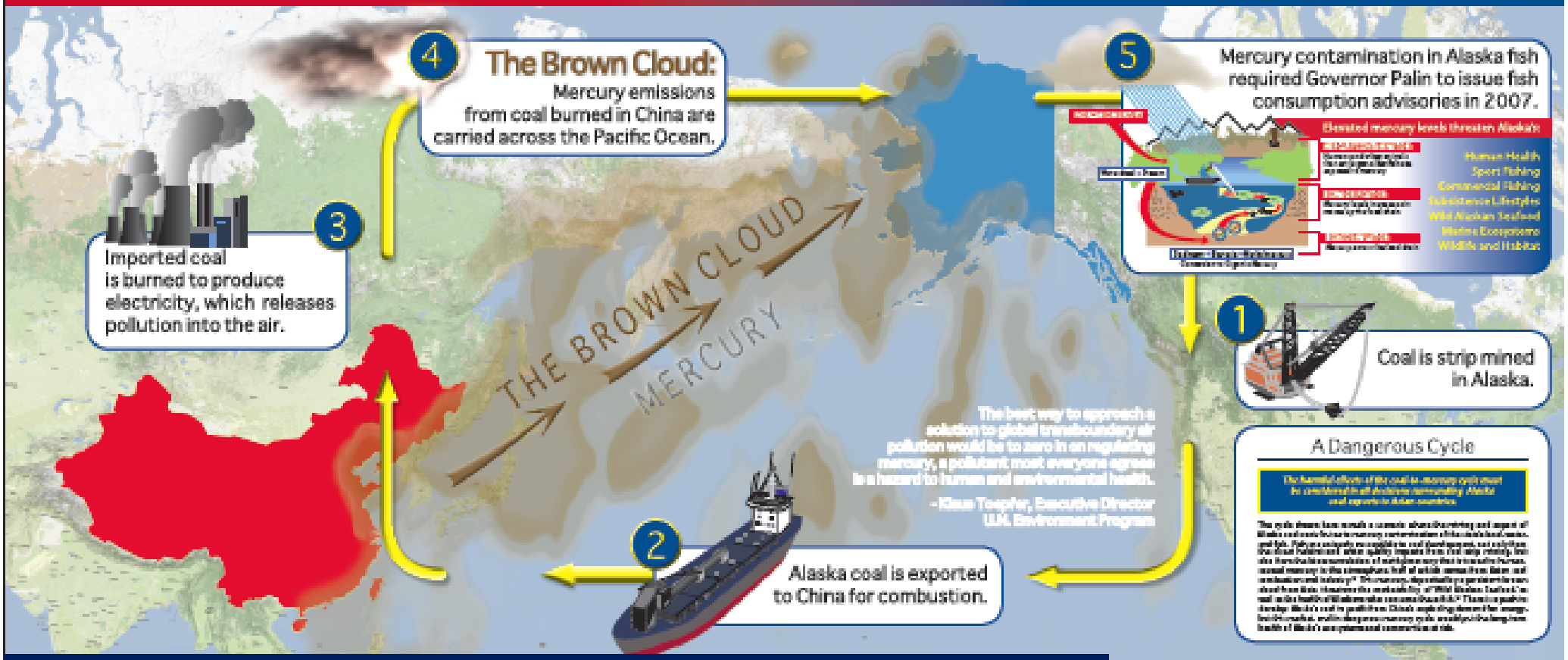
From UNEP, 2013. Global Mercury Assessment





Key sources of mercury pollution—ASGM and coal combustion

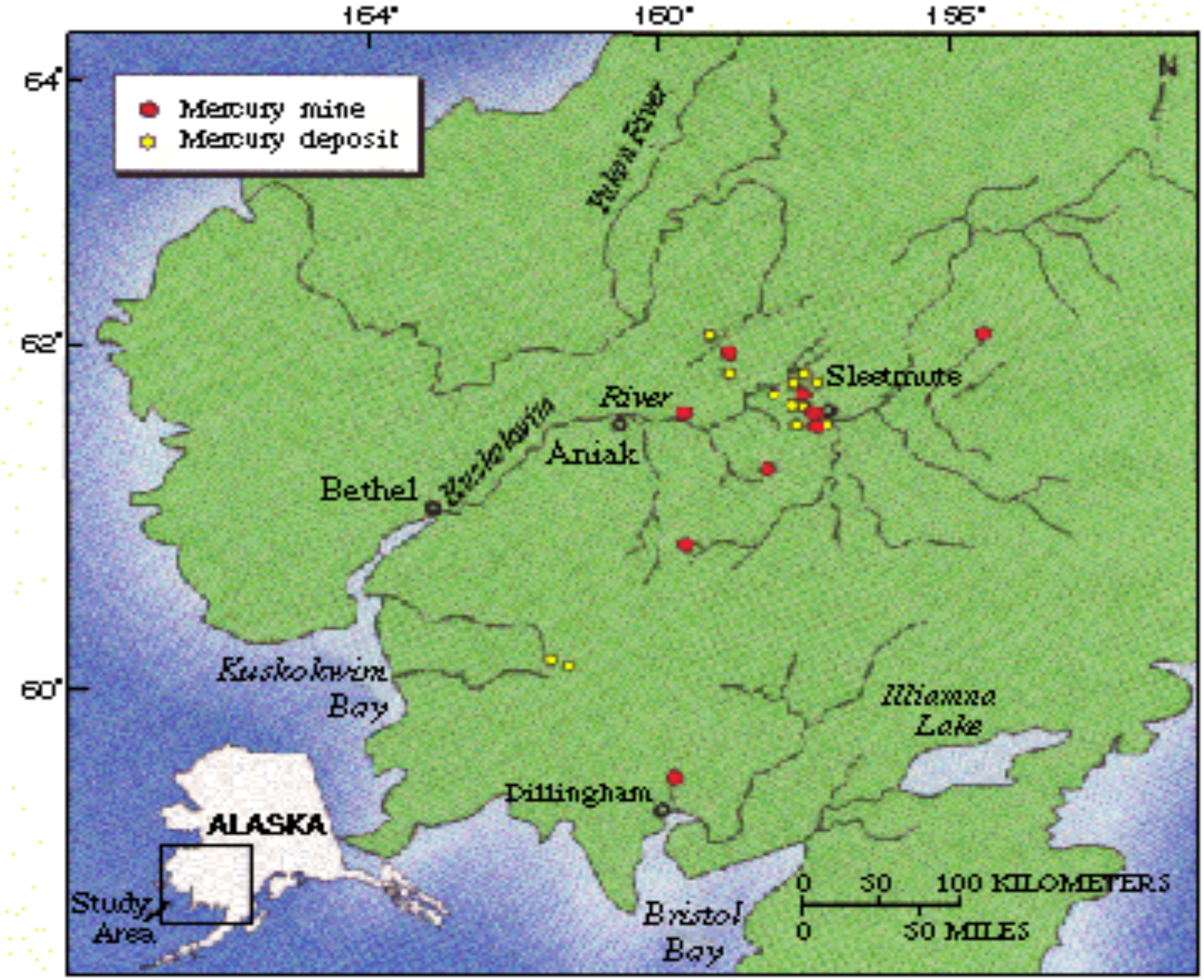
TOXIC TRADE:
The Coal-to-Mercury Cycle between Alaska and Asia



- Coal mined in Alaska is exported to Asia
- Air pollution travels from Asia to Alaska
- The Brown Cloud carries mercury and other air pollutants
- Mercury builds up in the food web
- Humans are exposed to mercury in contaminated fish

Source: Cook Inletkeeper

Location of Mercury Mines and Deposits in Kuskokwim Watershed



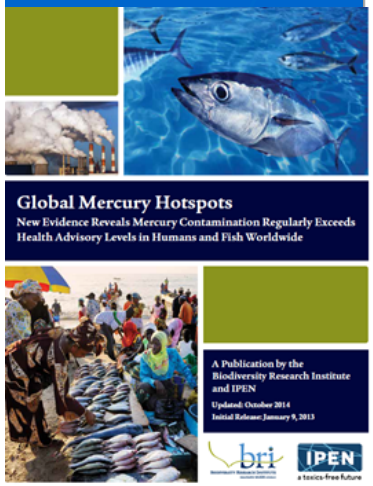
Location of mercury mines and deposits in southerwestern Alaska

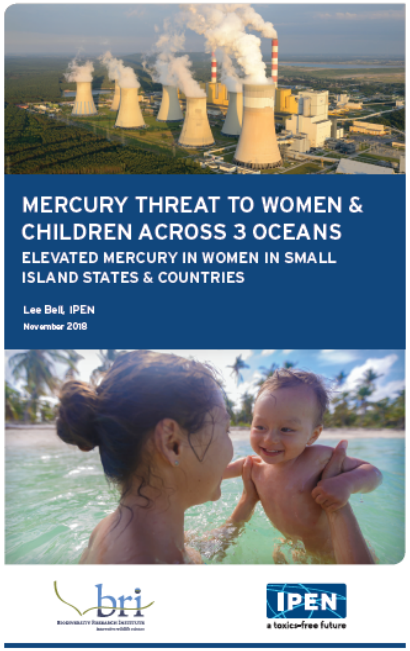
Mercury in Coal

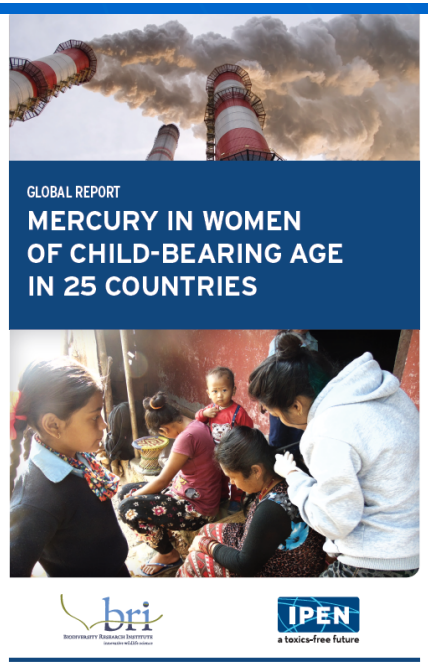
- Coal contains trace levels of mercury and some forms of coal have higher levels than others.
- Burning of coal liberates tonnes of mercury to atmosphere which travels and eventually deposits to land, waterways and the ocean

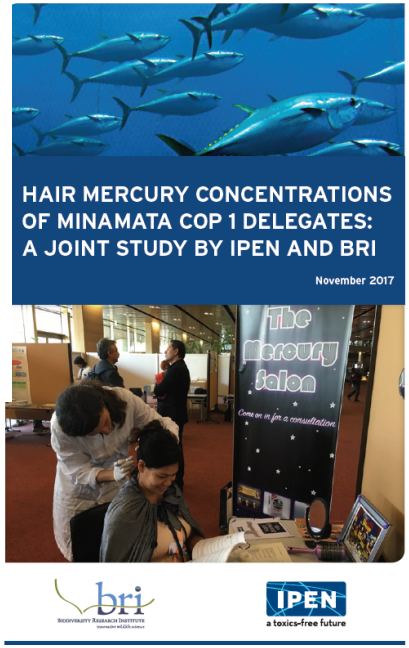
Mercury highly toxic to human health

- Mercury is a potent neurotoxic metal that is especially damaging to the developing brain and can affect the developing fetus months after the mother's exposure.
- The harmful effects of mercury, that can pass from a mother's body to a developing fetus, include neurological impairment, IQ loss, and damage to the kidneys and cardiovascular system.
- High levels of mercury exposure can lead to brain damage, blindness, seizures and the inability to speak.









IPEN: Global reach - taking local action

IPEN BRI Methodology contributing to Effectiveness Evaluation

- Biodiversity Research Institute/IPEN collaboration with methodology and sampling protocol may be replicated globally to establish baseline levels of mercury body burden.
- Establishing a 1ppm threshold for harm and proposing a 0.58 ppm threshold for future consideration.

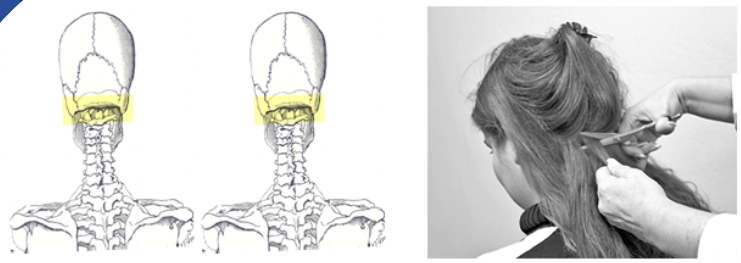


Figure 1. Occipital Region: Target sample area

- Secure the hair sample with a small self-adhesive label using an arrow to indicate the direction of the scalp.
- Please leave 3-4 cm of hair exposed from the label. The hair closest to the scalp will be analyzed for mercury. If it is not possible to leave 3-4 cm of hair, leave as much hair as possible.

Figure 2: Securing the sample

hair is shorter than 2 cm, please do not use a label.
t place the short hair in the Ziplock bag.

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le by placing a unique
bag. DO NOT
other

Figure 3: Proper storage of the sa

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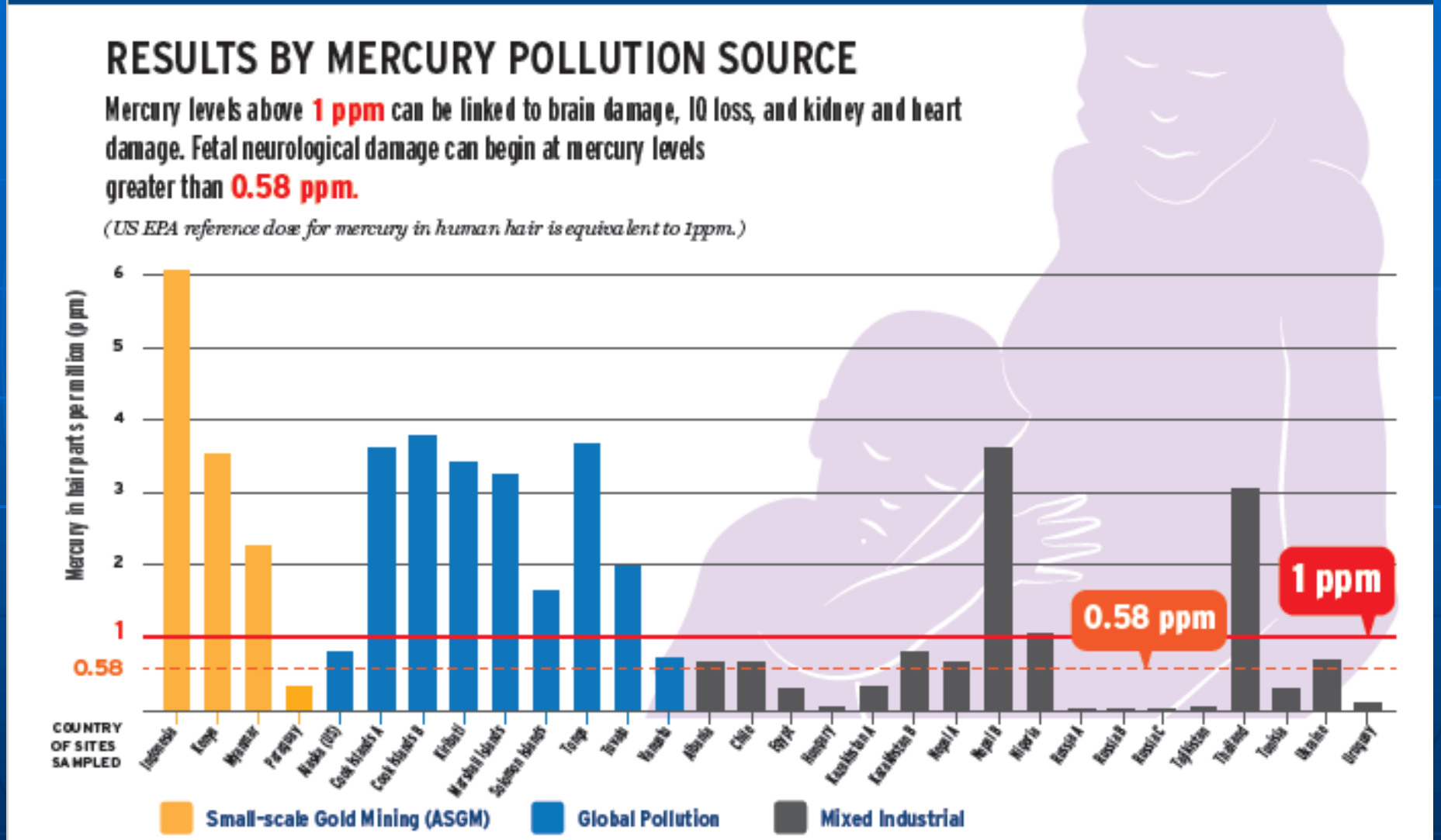
Major impacts on SIDS communities



Key Findings

- Elevated levels of mercury consistently found in:
  - Communities with a fish-rich diet
  - Small Island Developing States
  - ASGM communities
  - Fish consumers near industrial hotspots

The data indicate that there is a serious and substantial threat to women's and children's health from mercury exposure.

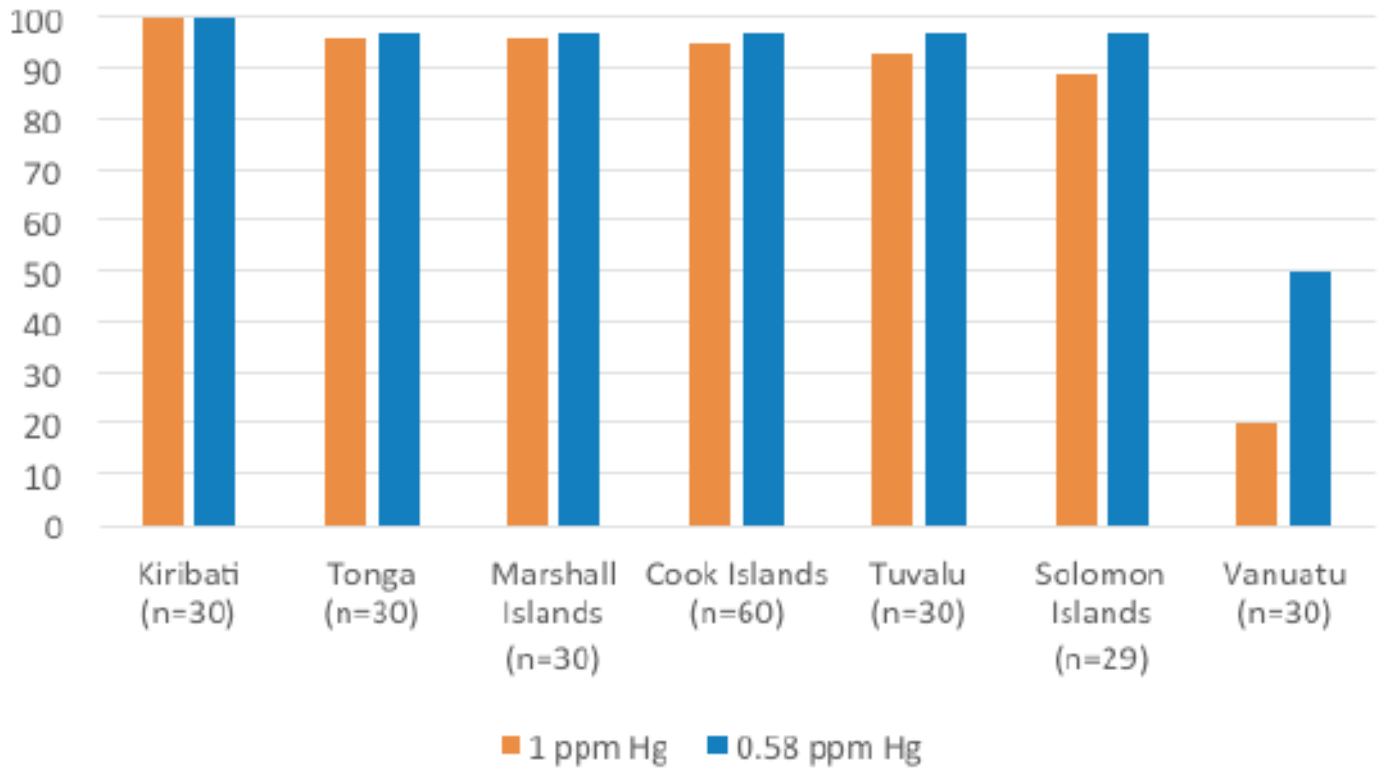


Figure 11. Percentage of Pacific Islander hair samples exceeding the mercury (Hg) 1 ppm reference level and the 0.58ppm level.

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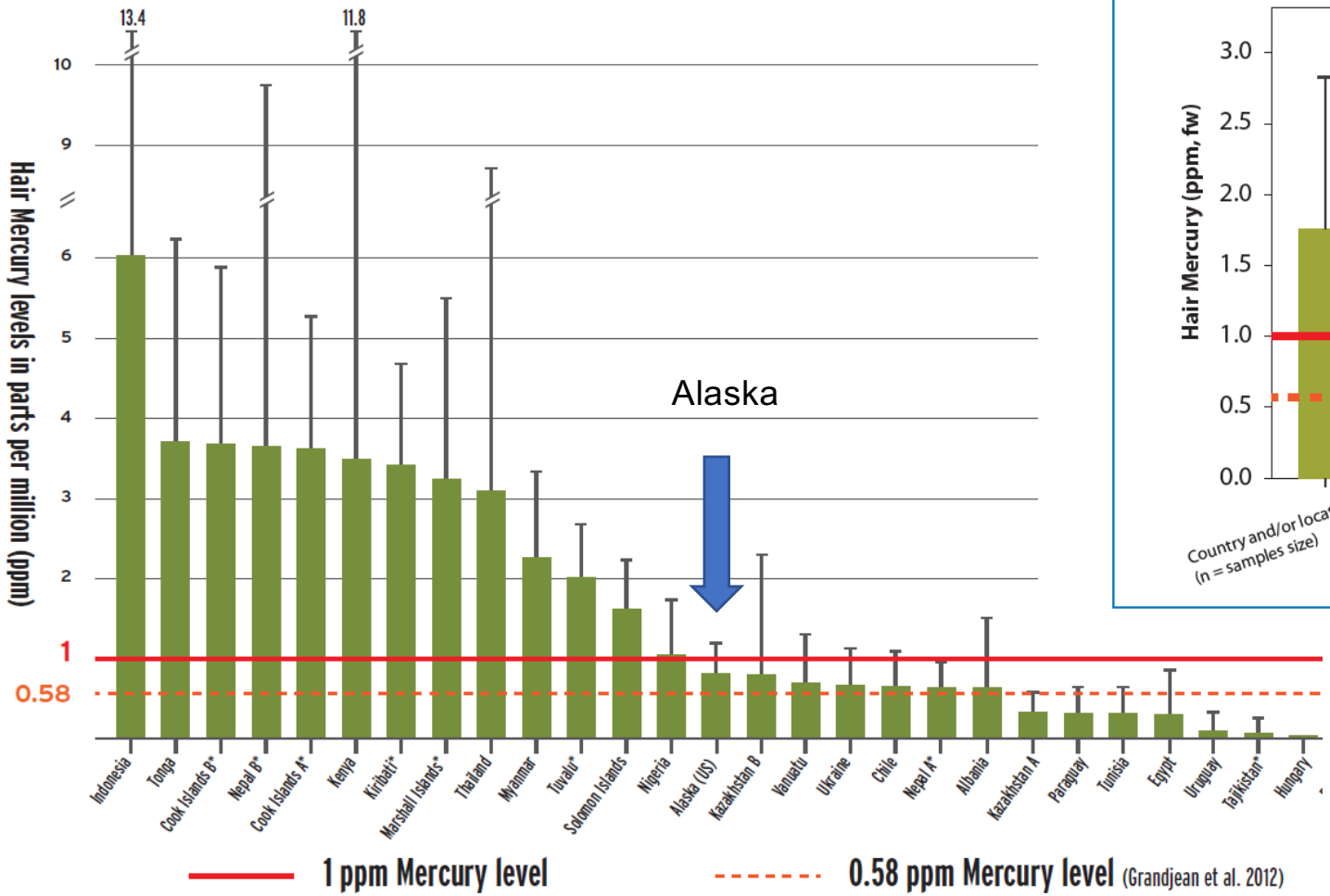
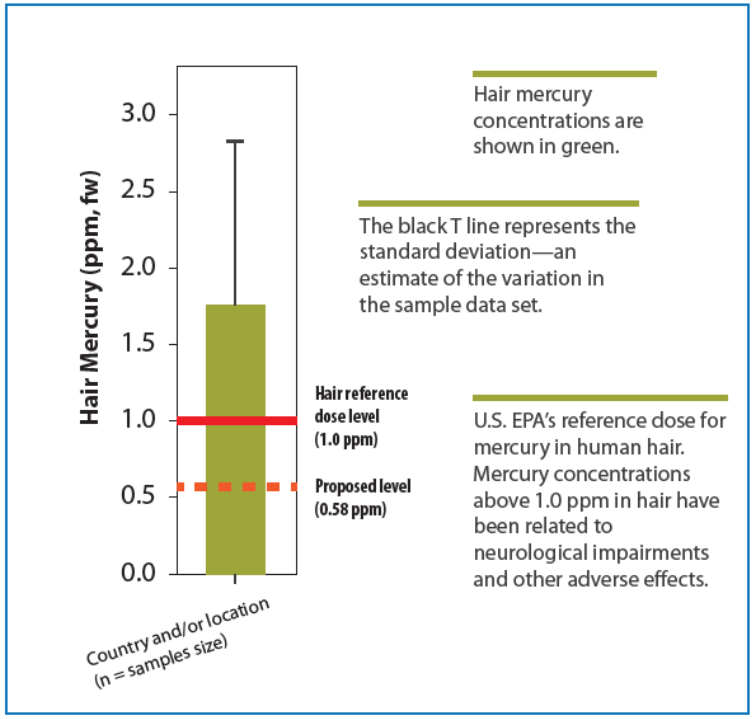


Interpreting the hair mercury concentration chart



Selected IPEN global report data including St. Lawrence Island, Alaska

Location	Number of samples	Mean Hg Concentration (ppm)	Number of samples greater than 1 ppm[a]	Percent greater than 1 ppm	Percent greater than 0.58 ppm[b]	Highest Hg level (ppm)
Thailand A Map Ta Phut	34	4.339 ± 7.608	23	68	97	35.29
Thailand B Tha Tum	34	1.814 ± 1.720	27	79	100	10.09
Tonga	30	3.677 ± 2.573	29	97	97	14.74
Ukraine	35	0.708 ± 0.442	7	20	51	1.91
United States Alaska	33	0.824 ± 0.450	10	30	70	1.90

Conclusions

- Diet and age key factors in Hg accumulation.
- Frequency of consumption of seal meat a significant factor
- Walrus less likely to accumulate mercury
- Sockeye salmon not heavily contaminated
- Data on halibut limited but larger fish (>40 pounds) will have higher accumulation levels of mercury than younger fish.
- Consideration of combined POPs and Hg contamination is an issue.

The Minamata Convention on Mercury

- **Goal – protect the environment and human health from anthropogenic mercury pollution by;**

Reducing and eventually eliminating primary mercury production and trade,

- Restricting global supply of mercury from stockpiles (chlor-alkali plants),
- Introducing BAT BEP for new coal power plants, cement kilns and other sources to reduce emissions and releases,
- Phase out or bans on mercury added products and processes that use mercury,
- Developing National Actions Plans to assess and minimise use of mercury in small scale gold mining.

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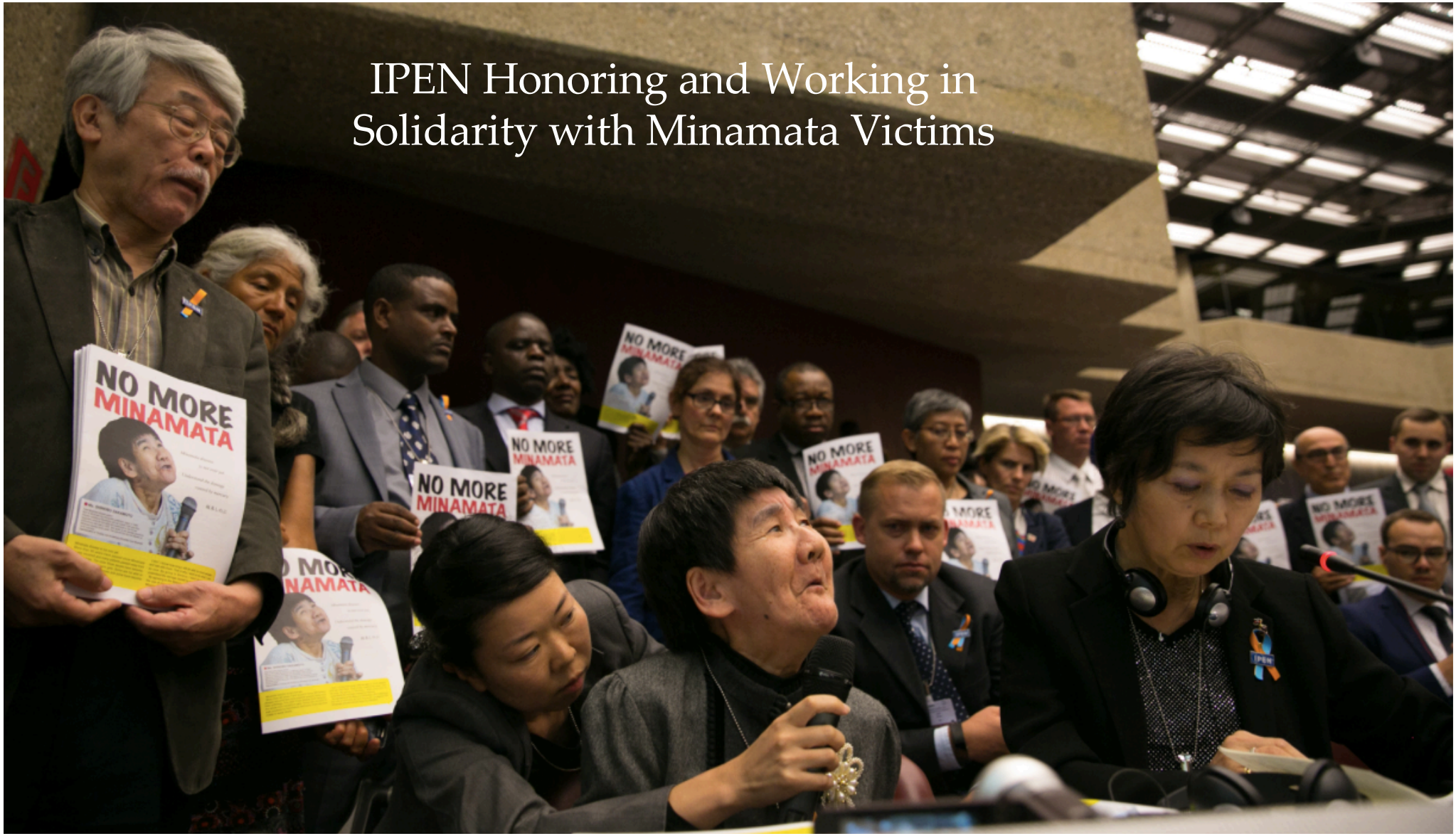
IPEN Honoring and Working in Solidarity with Minamata Victims



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"This is a terrible injustice. . . It is time for the governments of the world to take immediate action to eliminate mercury pollution."

ERIKA APATIKI

"We are calling on the governments of the world to take action to eliminate mercury pollution from mining, coal combustion, and other sources that continue to contaminate our traditional foods and harm our health and well-being without our consent. Due to special vulnerability of our Arctic communities, we emphasize the necessity of total elimination of mercury and other toxic chemicals that are harming us. I respectfully urge policymakers to take action to protect our health and well-being, the health of our future generations, our lands and territories globally."

"The chemicals present in our bodies are passed onto our Indigenous children and harm their ability to learn our languages, songs, stories, and knowledge."

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Solutions

- Phase out coal-fired power plants and other industrial processes that result in mercury emissions
- Use alternatives to mercury in ASGM
- Stop the mining of mercury and other metals mining developments that release mercury
- Eliminate the mercury trade
- Identify and clean up contaminated sites
- Stop the use of mercury in products