

太平洋は放射性廃水の産業下水道ではない
The Pacific Ocean Is Not a
Radioactive Wastewater Industrial Sewer!

Kevin Kamps

ケヴィン・キャンパス

Radioactive Waste Specialist

放射性廃棄物スペシャリスト

Beyond Nuclear

ビヨンド・ニュークリア

Kobe, Japan, August 27, 2023

8月27日神戸にて



CAMP DAVID

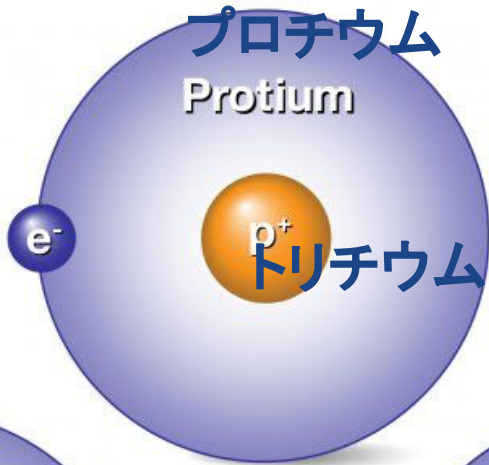
キャンプ デイビッド
日米韓3カ国首脳会談



ISOTOPES OF HYDROGEN 水素同位体

プロチウム

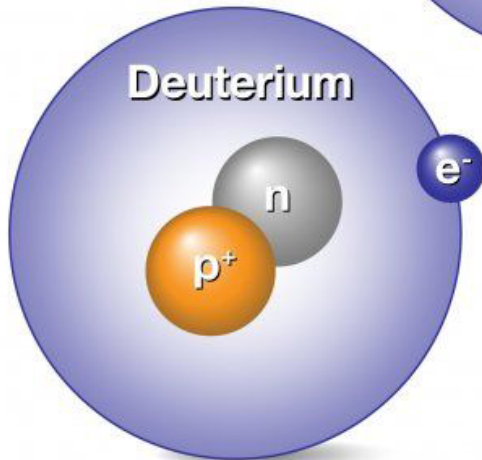
Protium



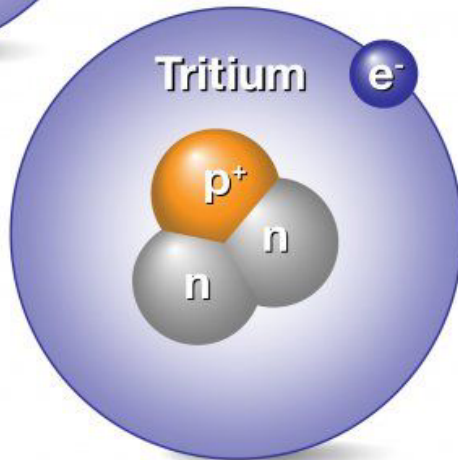
重水素

トリチウム

Deuterium



Tritium



ロザリー・バーテル博士、国際公衆衛生研究所

Dr. Rosalie Bertell, Int'l Institute of Concern for Public Health



ホットスポット

GREAT LAKES REGION NUCLEAR HOT SPOTS



五大湖周辺の



Great Lakes United



LEGEND

ONLY FACILITIES SPECIFICALLY RELATED TO NUCLEAR POWER GENERATION ARE ON THIS MAP

- Uranium Mining and Mill Tailings
- Operating Nuclear Power Reactors*
- Closed Nuclear Power Reactors*
- Nuclear Fuel Waste
- Low-and/or Intermediate-Level Radioactive Waste (L&ILRW) Sites**
- Uranium Processing & Fuel Fabrication
- Deep Geological Repository (DGR)
- Incinerator

*Number in brackets () indicates the number of reactors. **These wastes are also stored at all nuclear power reactor sites.

WOMEN WHO ROCK series

MARY-LOUISE ENGELS



R O S A L I E B E R T E L L

Scientist. Eco-Feminist. Visionary.

すごい女性たち
**WOMEN
WHO
ROCK**

ケイ・ドレイ、ビヨンド ニュークリア 名誉会長

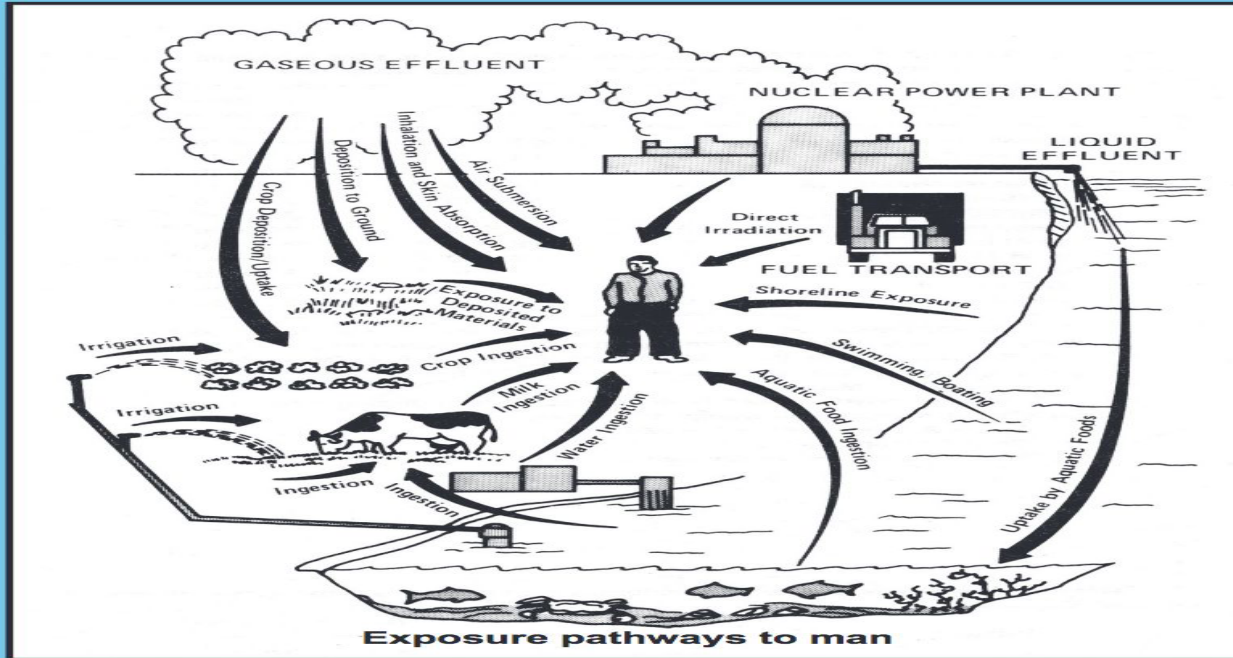
Kay Drey, Board President Emerita, Beyond Nuclear



Kay Drey - St. Louis, MO

米国の原子力発電所から日常的に放出される放射性物質

ROUTINE RADIOACTIVE RELEASES FROM U.S. NUCLEAR POWER PLANTS



↑ A DIAGRAM PUBLISHED IN 1977 BY THE U.S. NUCLEAR REGULATORY COMMISSION

1. **Arkansas One 1 & 2 (AR)**
Dardanelle Reservoir, Arkansas River
2. **Beaver Valley 1 & 2 (PA)**
Ohio River
3. **Braidwood 1 & 2 (IL)**
Braidwood Lake, Kankakee River
4. **Browns Ferry 1, 2 & 3 (AL)**
Tennessee River
5. **Brunswick 1 & 2 (NC)**
Cape Fear River, Atlantic Ocean
6. **Byron 1 & 2 (IL)**
Rock River
7. **Callaway (MO)**
Missouri River
8. **Calvert Cliffs 1 & 2 (MD)**
Chesapeake Bay
9. **Catawba 1 & 2 (SC)**
Lake Wylie, Catawba River
10. **Clinton (IL)**
Clinton Lake, Salt Creek
11. **Columbia (WA)**
Columbia River
12. **Comanche Peak 1 & 2 (TX)**
Squaw Creek Reservoir, Brazos River
13. **Donald C. Cook 1 & 2 (MI)**
Lake Michigan
14. **Cooper (NE)**
Missouri River
15. **Davis-Besse (OH)**
Lake Erie
16. **Diablo Canyon 1 & 2 (CA)**
Pacific Ocean
17. **Dresden 2 & 3 (IL)**
Kankakee River
18. **Duane Arnold (IA)**
Cedar River
19. **Joseph M. Farley 1 & 2 (AL)**
Chatahoochee River
20. **Fermi 2 (MI)**
Lake Erie
21. **James A. FitzPatrick (NY)**
Lake Ontario
22. **Fort Calhoun (NE)**
Missouri River
23. **R. E. Ginna (NY)**
Lake Ontario
24. **Grand Gulf (MS)**
Mississippi River
25. **Edwin I. Hatch 1 & 2 (GA)**
Altamaha River
26. **Hope Creek (NJ)**
Delaware River
27. **Indian Point 2 & 3 (NY)**
Hudson River
28. **LaSalle 1 & 2 (IL)**
LaSalle Lake, Illinois River
29. **Limerick 1 & 2 (PA)**
Schuylkill River
30. **McGuire 1 & 2 (NC)**
Lake Norman, Catawba River
31. **Millstone 2 & 3 (CT)**
Niantic Bay of Long Island Sound
32. **Monticello (MN)**
Mississippi River
33. **Nine Mile Point 1 & 2 (NY)**
Lake Ontario
34. **North Anna 1 & 2 (VA)**
Lake Anna, North Anna River, Pamunkey River, York River, Chesapeake Bay



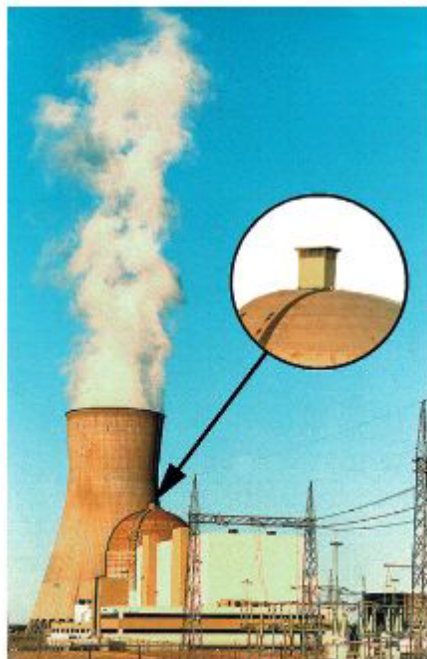
35. **Oconee 1, 2 & 3 (SC)**
Lake Keowee, Savannah River
36. **Oyster Creek (NJ)**
Barnegat Bay of Atlantic Ocean
37. **Palisades (MI)**
Lake Michigan
38. **Palo Verde 1, 2 & 3 (AZ)**
Groundwater plus Phoenix sewage water from 35 miles away provide the cooling water. Waste water is evaporated; saturated sludges are shipped to a radioactive waste dump.
39. **Peach Bottom 2 & 3 (PA)**
Conowingo Pond, Susquehanna River, Chesapeake Bay
40. **Perry (OH)**
Lake Erie
41. **Pilgrim (MA)**
Cape Cod Bay of Atlantic Ocean
42. **Point Beach 1 & 2 (WI)**
Lake Michigan
43. **Prairie Island 1 & 2 (MN)**
Mississippi River
44. **Quad Cities 1 & 2 (IL)**
Mississippi River
45. **River Bend (LA)**
Mississippi River
46. **H. B. Robinson 2 (SC)**
Lake Robinson, Black Creek
47. **Saint Lucie 1 & 2 (FL)**
Atlantic Ocean
48. **Salem 1 & 2 (NJ)**
Delaware River
49. **Seabrook (NH)**
Atlantic Ocean
50. **Sequoyah 1 & 2 (TN)**
Chickamauga Lake, Tennessee River
51. **Shearon Harris (NC)**
Harris Lake, Buckhorn Creek, Cape Fear River
52. **South Texas Project 1 & 2 (TX)**
Colorado River, Gulf of Mexico
53. **V. C. Summer (SC)**
Monticello Reservoir, Broad River
54. **Surry 1 & 2 (VA)**
James River, Chesapeake Bay
55. **Susquehanna 1 & 2 (PA)**
Susquehanna River, Chesapeake Bay
56. **Three Mile Island (PA)**
Susquehanna River, Chesapeake Bay
57. **Turkey Point 3 & 4 (FL)**
Biscayne Bay of Atlantic Ocean
58. **Vogtle 1 & 2 (GA)**
Savannah River
59. **Waterford 3 (LA)**
Mississippi River
60. **Watts Bar 1 & 2* (TN)**
Watts Bar Lake, Tennessee River
*Unit #2 is expected to begin operating in 2016.
61. **Wolf Creek (KS)**
Coffey County Lake, Neosho River

REACTORS ARE CLOSING
For an update, go to: <http://www.beyondnuclear.org/reactors-are-closing/>

**REACTORS ROUTINELY
RELEASE RADIOACTIVE
WASTES INTO THE WATER
AND INTO THE AIR !!**

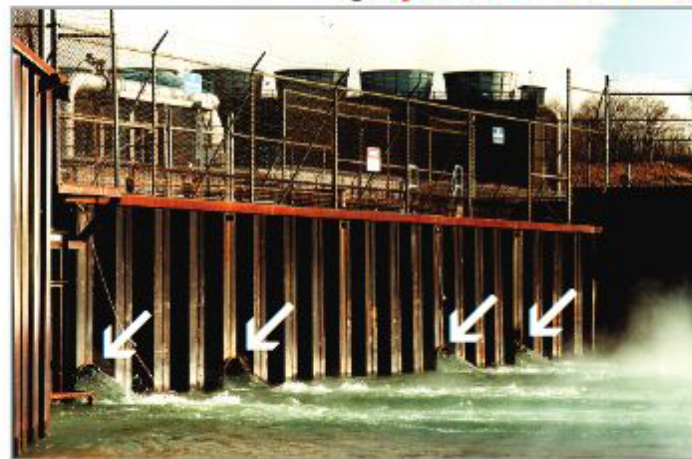
**PLANNED
RELEASES**
from
Nuclear Plants
into Air,
Water, and Soil

**IT DOES
NOT
TAKE AN
ACCIDENT**



The **vent** on top of the Reactor Building at the Callaway 1000-megawatt pressurized water reactor.

Water discharge area at the Palisades nuclear power plant on Lake Michigan. Note the flow from four big **ejection outlets**.



大気、水、土壌への計画放出

例：原子炉からのベント
河川・湖・海への放出

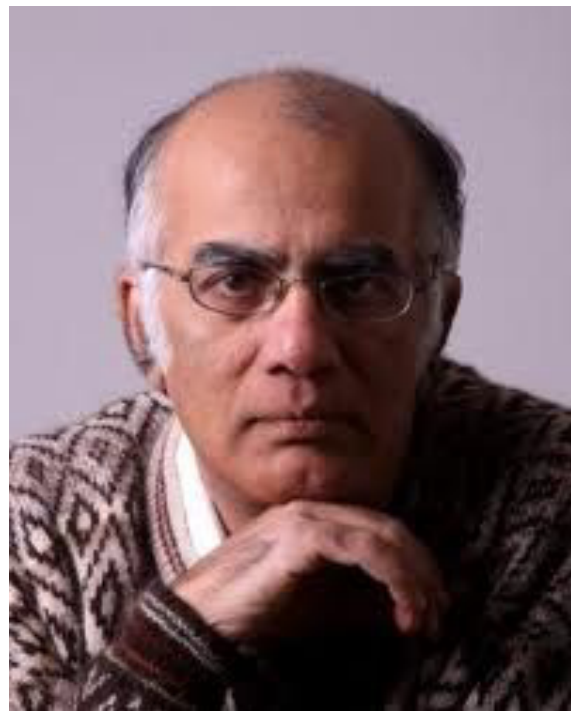
シンディ・フォルカーズ

ビヨンド・ニュークリア、放射線衛生スペシャリスト

Cindy Folkers,
Radiation Health Specialist,
Beyond Nuclear



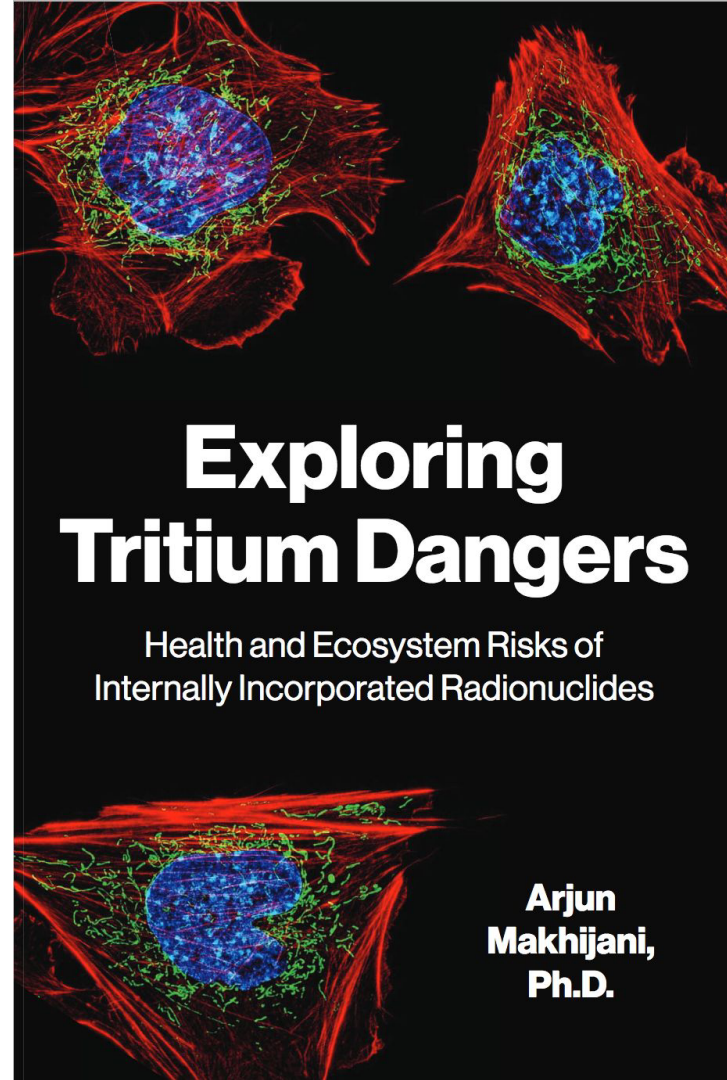
アルジュン・マキジャニ博士 エネルギー・環境研究所所長



Dr. Arjun Makhijani,
President,
Institute for Energy and Environmental Research

トリチウムの危険性を探る」

アルジュン・マキジャニ



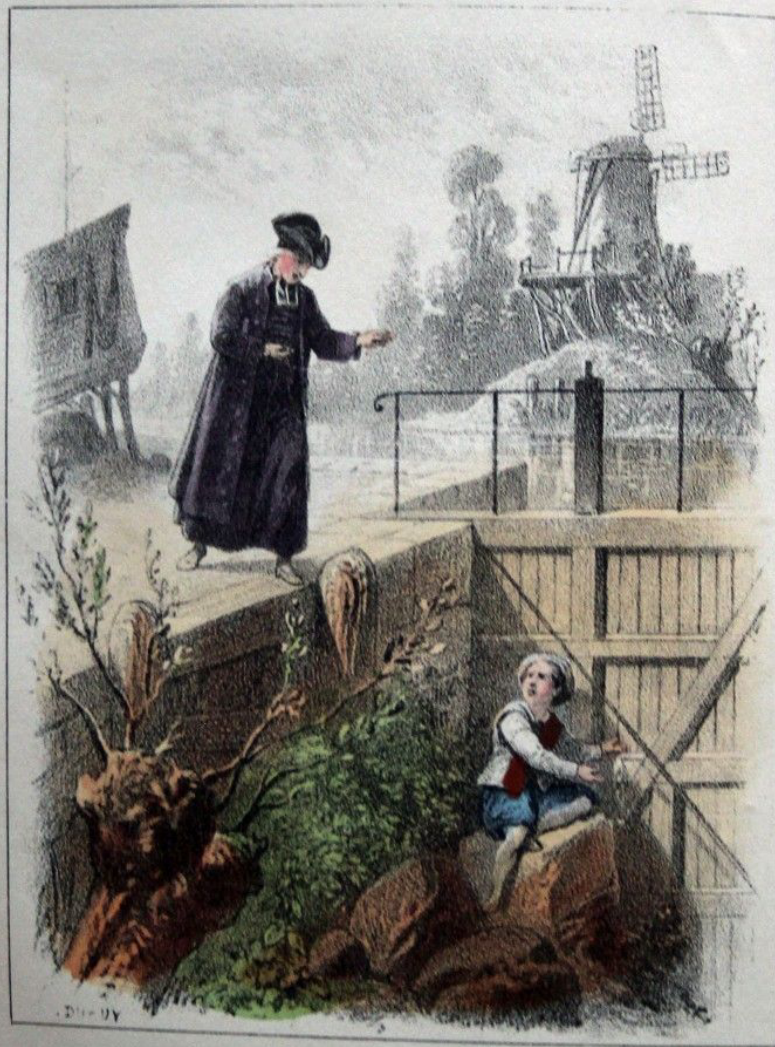
Exploring Tritium Dangers

Health and Ecosystem Risks of
Internally Incorporated Radionuclides

Arjun
Makhijani,
Ph.D.

Little
Dutch
Boy

堤防の決壊を防いだ
オランダの少年



福島原発事故後の日本での反原発デモ

Post-Fukushima catastrophe anti-nuke protests in Japan



インディアンポイント原発廃炉運動に
集まった人々
前列右から3番目がケVINさん



電離放射線

甲状腺

皮膚

肝臟

卵巢

筋肉

IONIZING RADIATION

(radiation delivered to rays, x-rays, gamma human cells from beta rays or alpha particles)

THYROID
Iodine-131 beta (gamma), 8 days

SKIN
Sulfur-35 beta, 87 days

LIVER
Cobalt-60 beta (gamma), 5 yrs.

OVARIES
Iodine-131 gamma, 8 days
Cobalt-60 gamma, 5 yrs.
Krypton-85 gamma, 10 yrs.
Potassium-42 gamma, 12 hours
Cesium-137 gamma, 30 yrs.
Plutonium-239 alpha, 24,000 yrs.

MUSCLE
Potassium-42 beta (gamma), 12 hours
Cesium-137 (and gonads) beta (gamma), 30 yrs.

LUNGS
Radon-222 (and whole body) alpha, 3.8 days
Uranium-233 (and bone) alpha, 162,000 yrs.
Plutonium-239 (and bone) alpha, 24,000 yrs.
Krypton-85 gamma, 10 yrs.

SPLEEN
Polonium-210 alpha, 138 days

KIDNEYS
Ruthenium-106 gamma (beta) 1 yr.

BONE
Radium-226 alpha, 1620 yrs.
Strontium-90 beta, 28 yrs. and more.

The reproductive organs are attacked by all radioactive isotopes emitting gamma radiation. In addition, the deadly Plutonium-239 is known to concentrate in the gonads. The radiation it emits can cause birth defects, mutations and miscarriages in the first generation after exposure and/or successive generations.

The times listed next to the type of ray emitted are the half-lives: how long it takes for half of the radioactive material to break down.

If you ingest alpha and beta emitters, they set up permanently next to the marrow of your bones, in your reproductive organs or elsewhere.

The effects of ionizing radiation are not immediate. Exposure to radiation can cause cancers many years later. Exposure to very low levels of radiation can be equally dangerous over time.

Authorship notes:
Based and drawing by Lawrence H. and Pamela H. From the book "The Nuclear Fuel Cycle in Nuclear Activities in the World by High Level Waste" published by the International Atomic Energy Agency (IAEA), Vienna, Austria, 1982. An earlier version is also available in the book "The Effects of Atomic Energy on Man and the Environment" published by the International Atomic Energy Agency (IAEA), Vienna, Austria, 1982. Copyright © 1982 by Lawrence H. and Pamela H. All rights reserved. "IAEA" and "Nuclear Energy" are trademarks of the International Atomic Energy Agency. "Nuclear Energy" and "Nuclear Energy" are trademarks of the International Atomic Energy Agency.

肺

脾臟

腎臟

骨



Of Marine Pollution by Dumping of Wastes and Other Matter








廃棄物その他の物の投棄による海洋汚染の防止に関する条約(1972年)」、略して「ロンドン条約」は、人間活動から海洋環境を保護するための最初の世界条約のひとつで、1975年から発効している。その目的は、あらゆる海洋汚染源の効果的な制御を促進し、廃棄物その他の物質の投棄による海洋汚染を防止するため、実行可能なあらゆる措置を講じることである。現在、87カ国がこの条約の締約国である。(訳者註:日本語訳は、元の英語に貼り付け)

50 years of the London Convention

In 2022, IMO is marking fifty years since the adoption of the London Convention.

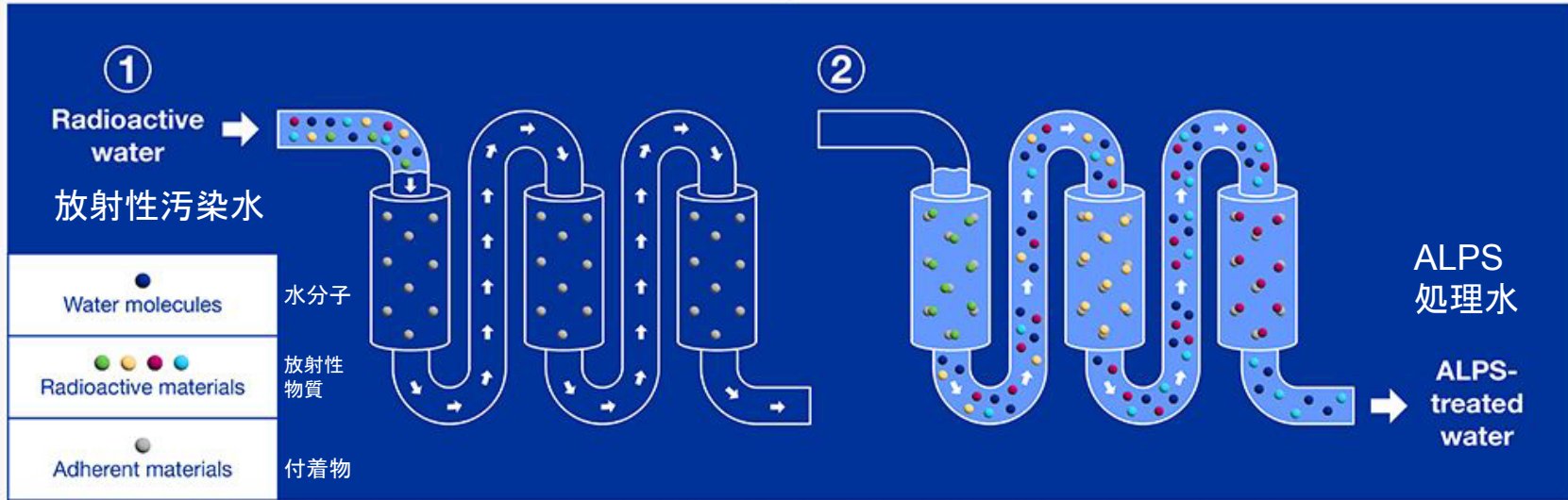
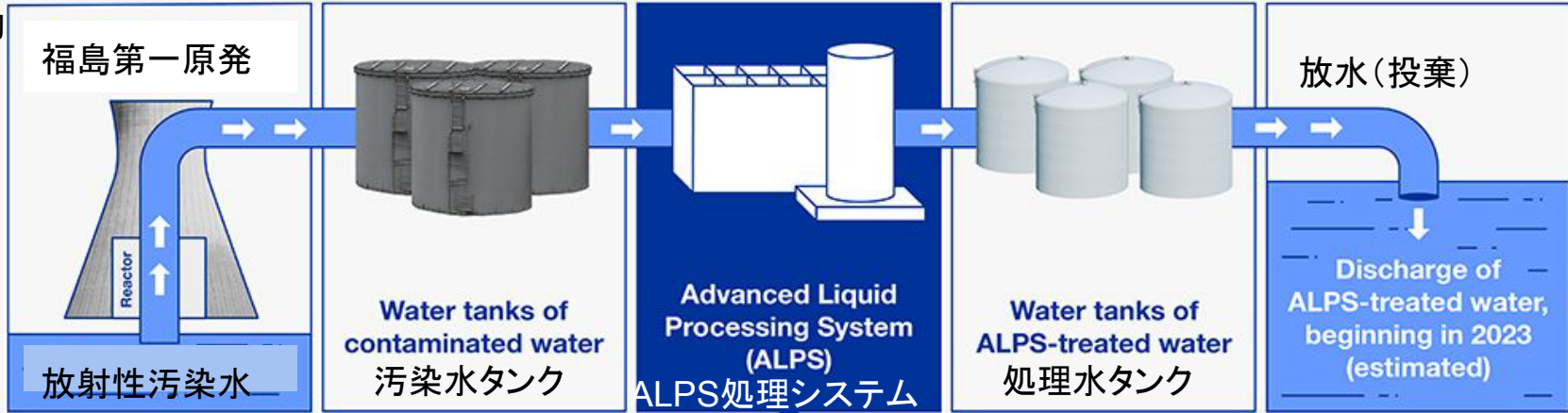
- ▾ [Pollution Prevention](#)
- ▾ [Pollution Preparedness and Response](#)
- ▾ [Ballast Water Management](#)
- ▾ [Biofouling](#)
 - [Anti-fouling systems](#)
- ▾ [Ship Recycling](#)
 - [Port Reception facilities](#)
 - [Special Areas under MARPOL](#)
 - [Particularly Sensitive Sea Areas](#)
- ▾ [London Convention and Protocol](#)

[Compliance with the London Convention and Protocol](#)

- >  [Full text of the London Protocol and 1996 amendments](#)
- >  [Full text of the London Convention](#)
- >  [Map of current LC-LP Parties \(April 2022\)](#)
- >  [Information leaflet about London Convention and Protocol](#)
- >  [London Protocol 20 years - what it is and why it is needed](#)
- >  [Strategic Plan for the London Protocol and London Convention](#)
- >  [Benefits of implementing the London Protocol](#)



付着物



出典: 経産省・東電

Source: Japan Ministry of Economy Trade and Industry (METI) and Tokyo Electric Power Company (TEPCO)



警告:
放置されている
放射能放出

地下にはもつれあう腐食配管
数十年間も検査なし
現在、放射能汚染水が漏れている

ワシントン・ニュー・トリウム・プロジェクト

WARNING:
UNCONTROLLED
RADIOACTIVE
RELEASE

WHILE WORK IS IN PROGRESS
BY LICENSED PERSONNEL,
EMERGENCY PREPAREDNESS
AND PROTECTIVE MEASURES
SHOULD BE MAINTAINED.

La Hague, France 仏 ラ・アーグ



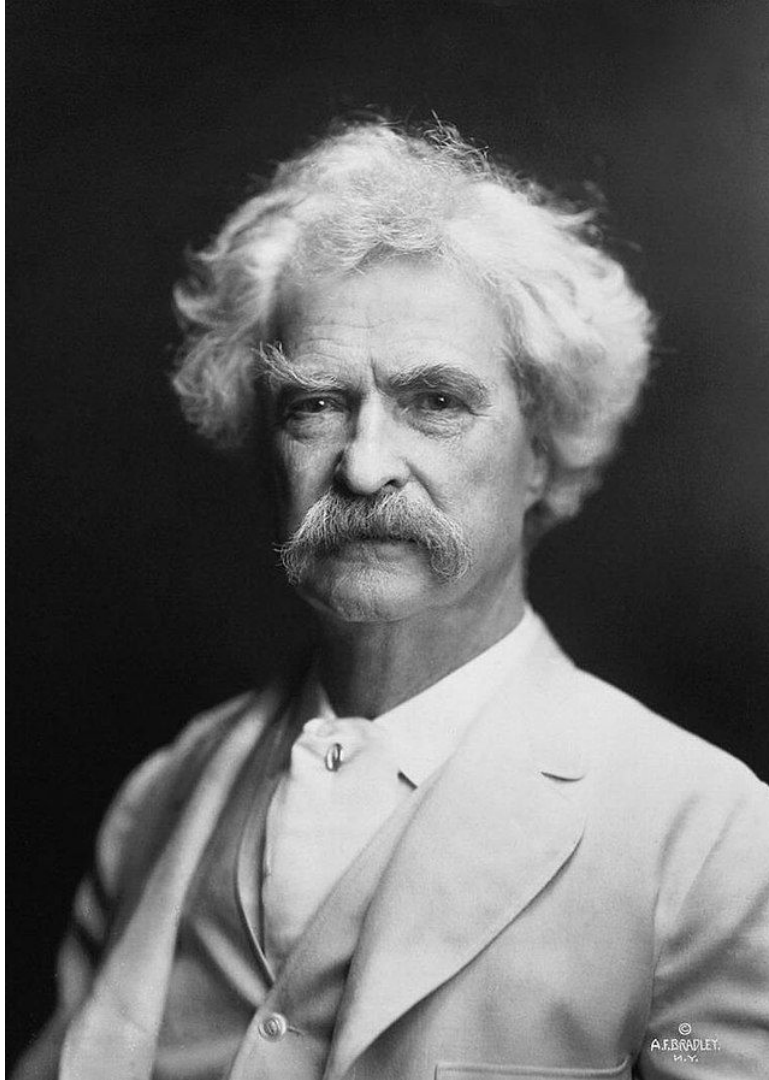
(c) Greenpeace/Gleizes

Sellafield, United Kingdom 英 セラフィールド



Mark Twain

マーク・トウェイン



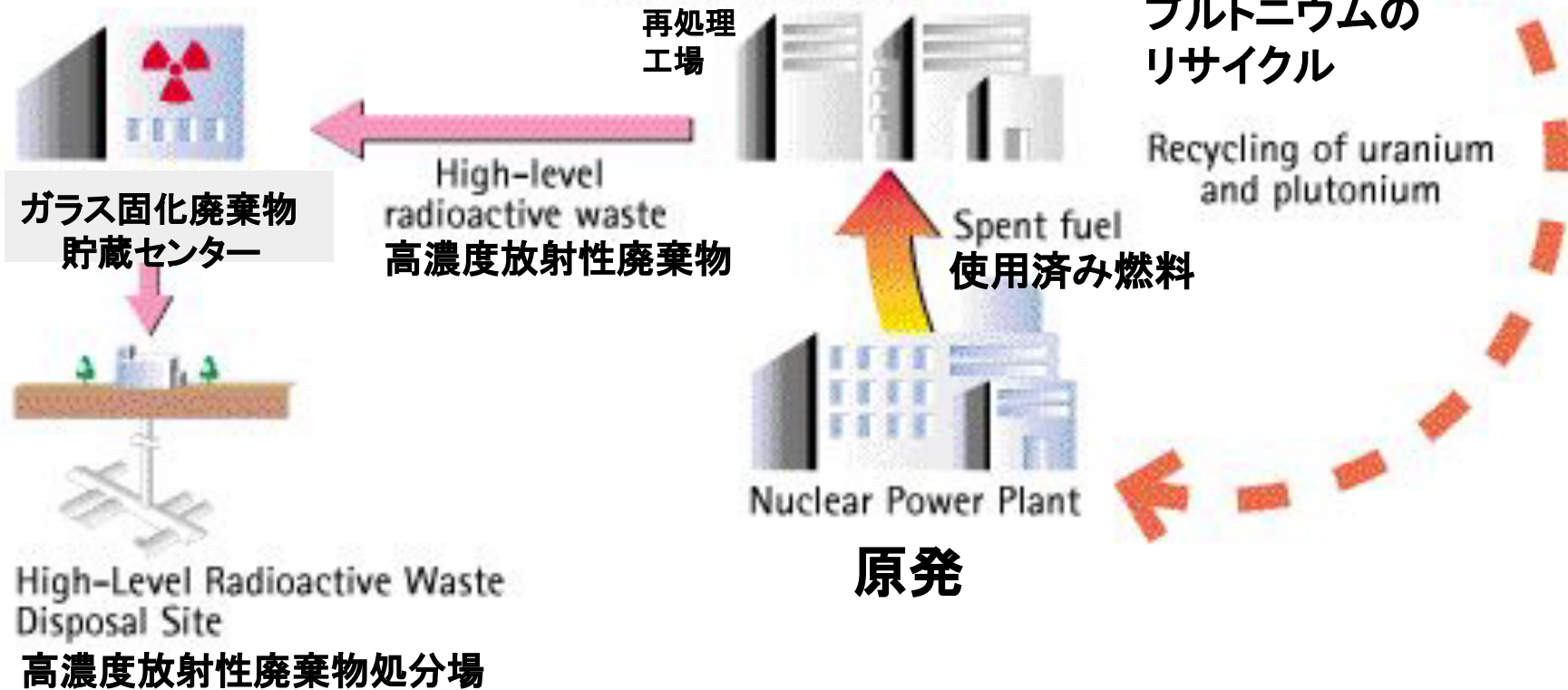
ワシントン大学 医学部 ミズーリ州 セントルイス

Washington University Medical Campus, St. Louis, MO

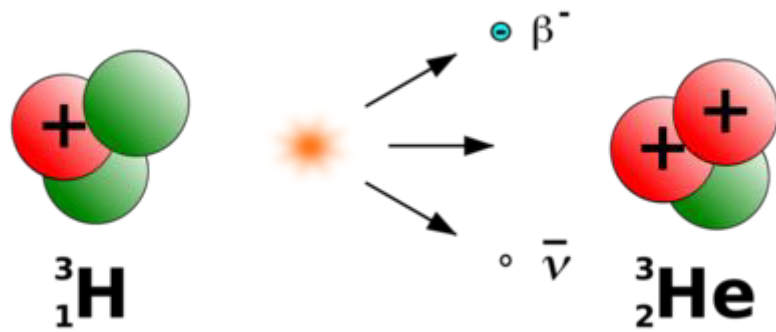




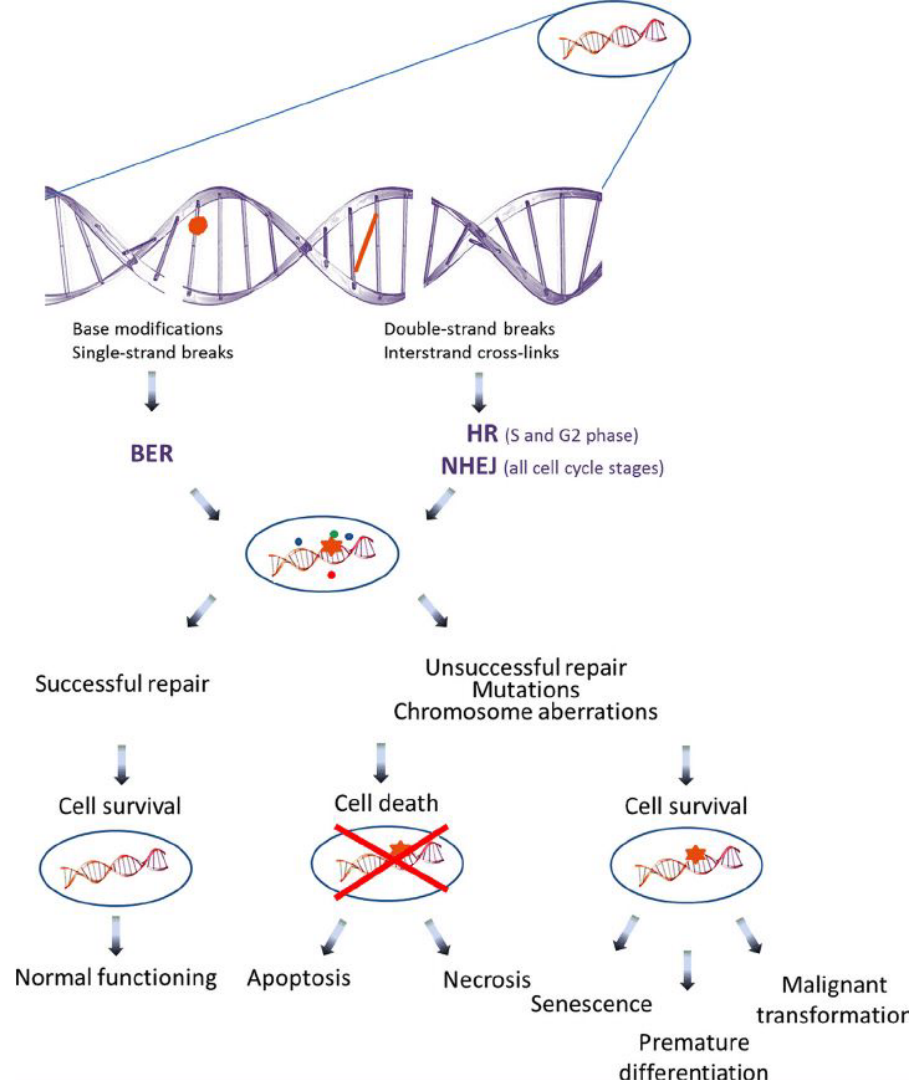
Flow of High-level Radioactive Waste 高レベル放射性廃棄物の処理





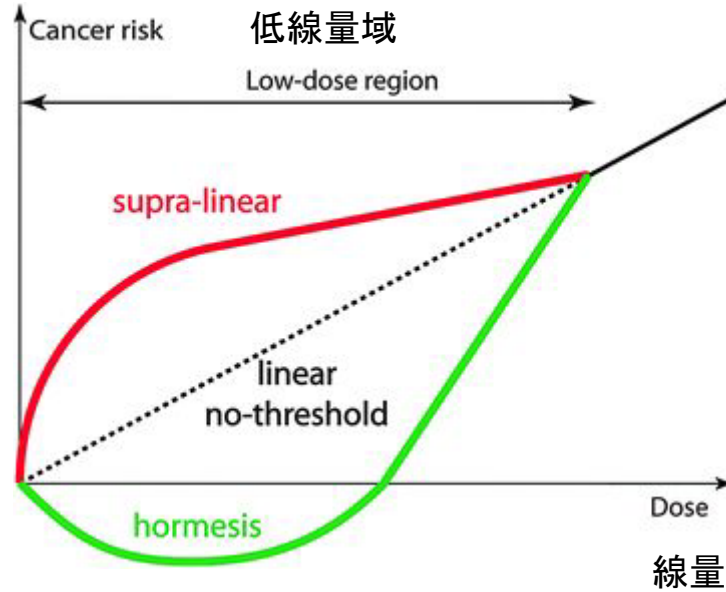




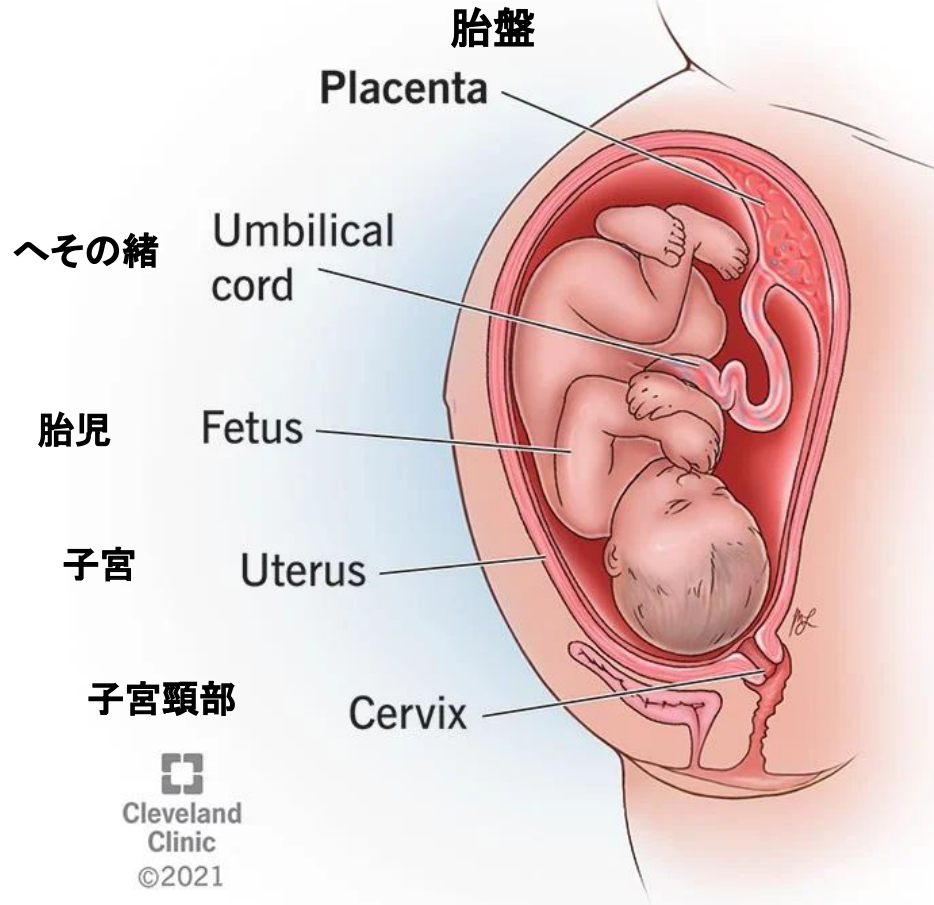


Linear no-threshold model

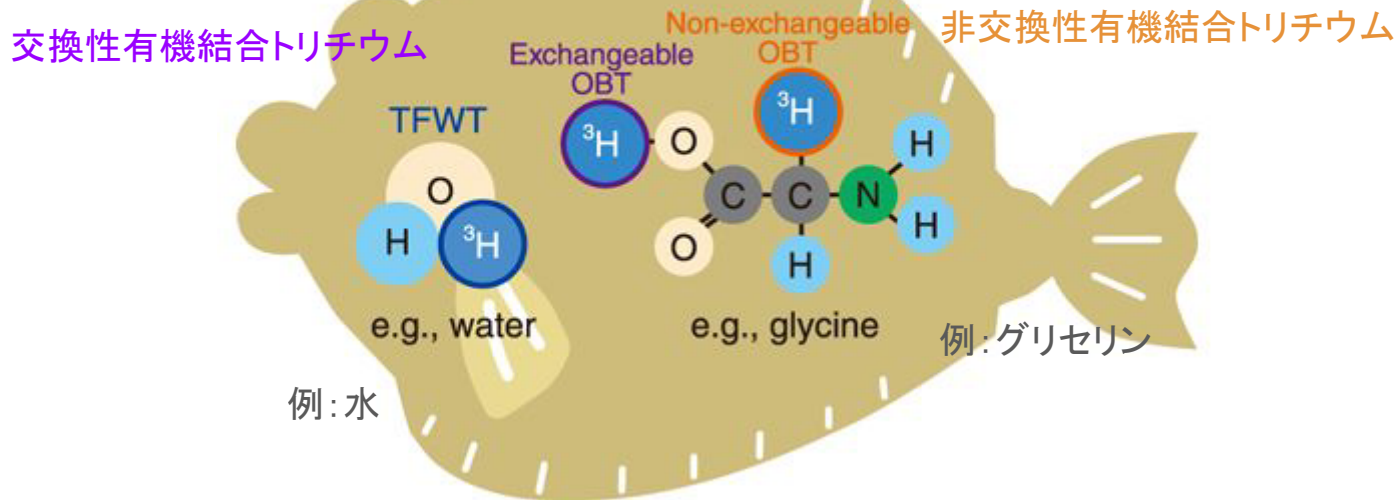
発癌リスク



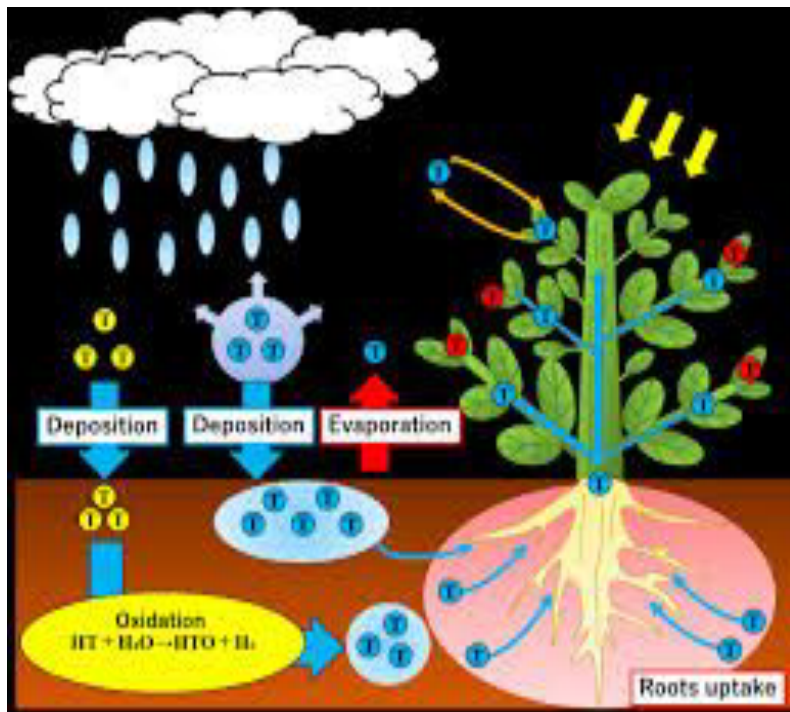
Placenta

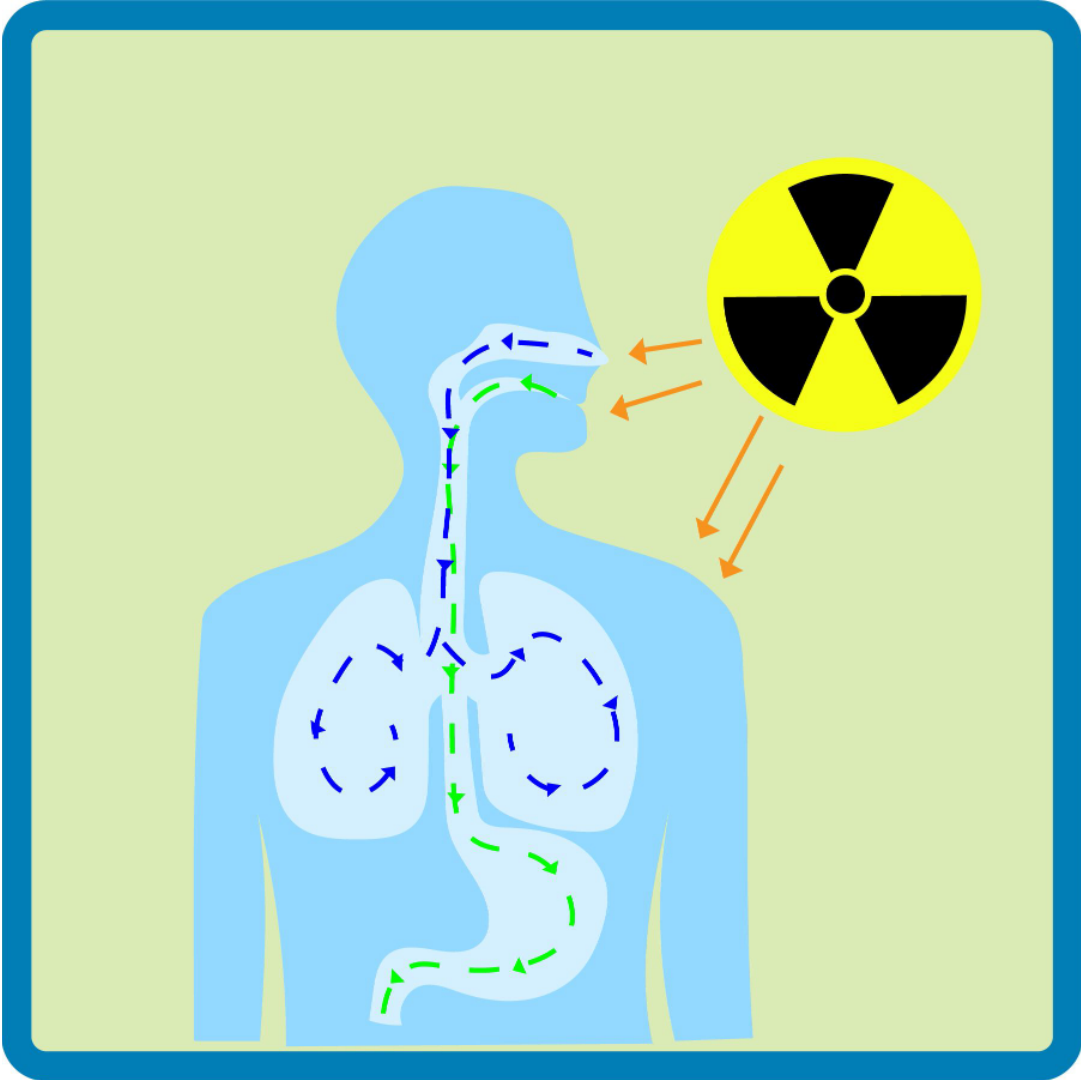


Organically Bound Tritium 有機結合トリチウム

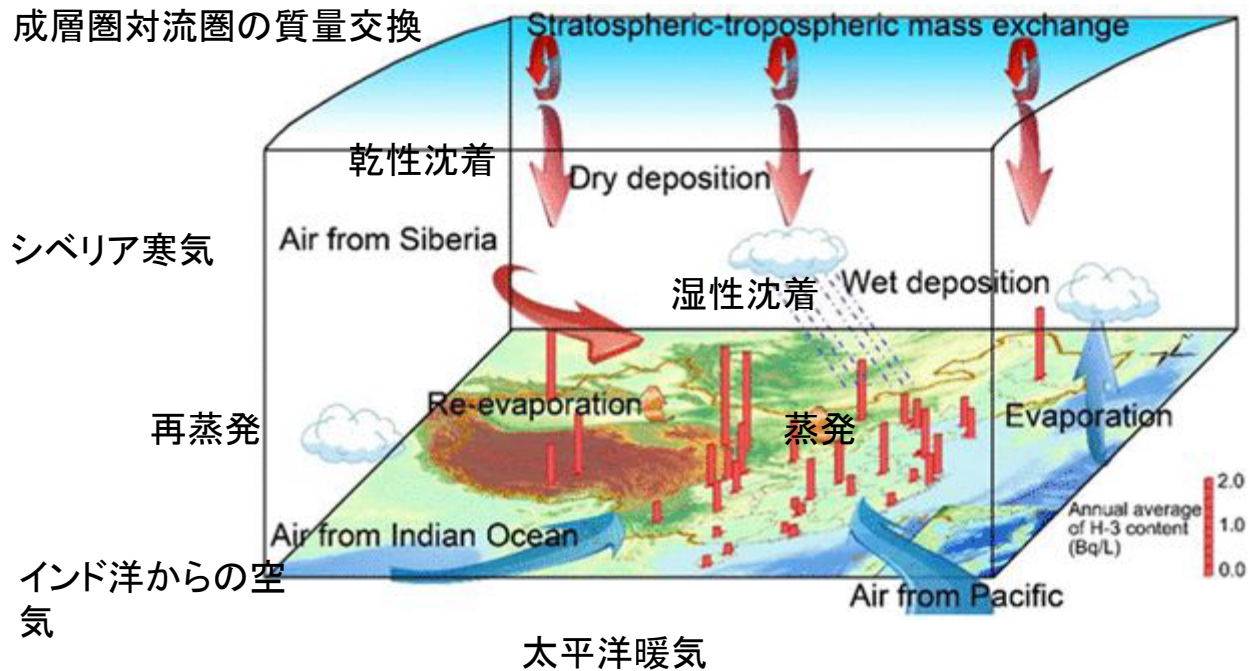


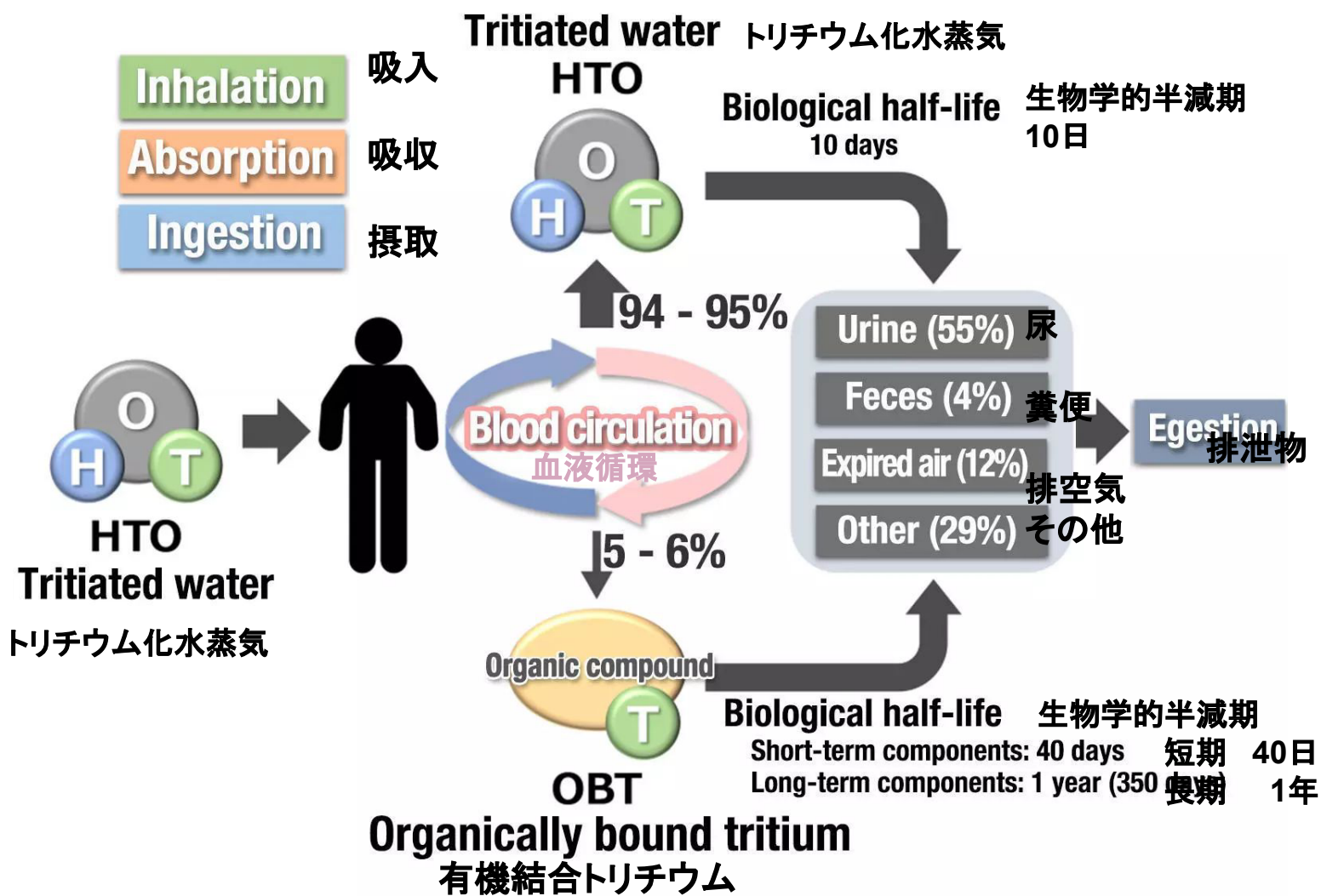
Organically Bound Tritium 有機結合トリチウム





Tritiated Water Vapor トリチウム化水蒸気





「トリチウムの
危険性の探求」

from

マキジャニ

“Exploring Tritium Dangers”

By Makhijani

【動物細胞の模式図】

1核小体 2核 3リボゾーム

4小胞 5粗面小胞体

6ゴルジ体 7細胞骨格

8平滑小胞体 9ミトコンドリオン

10液胞 11細胞質 12リソソーム

13中心小体 14細胞膜

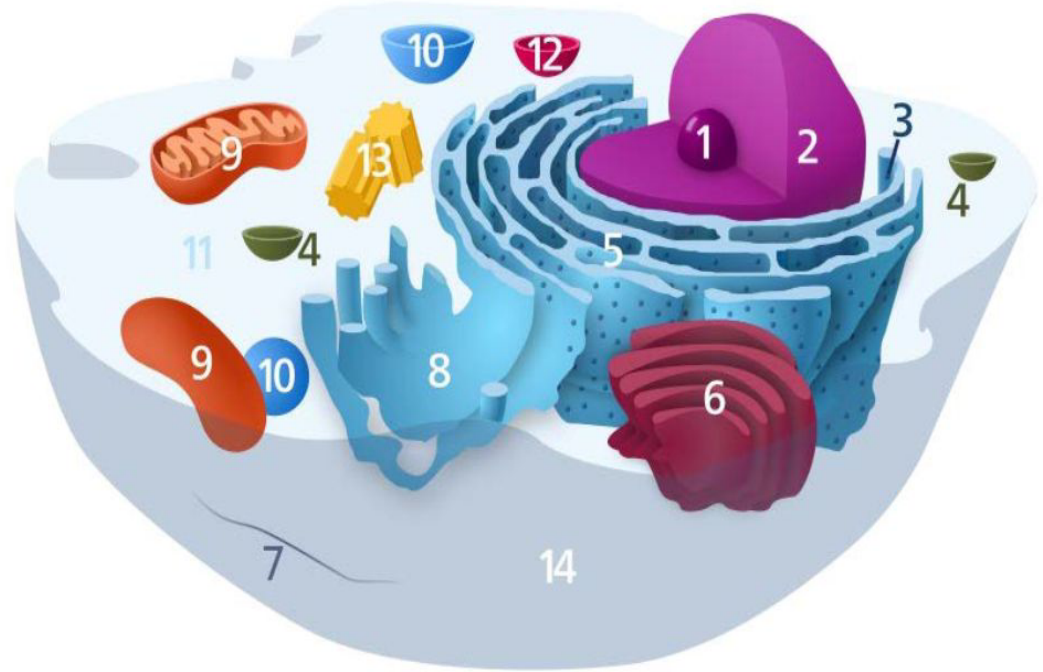


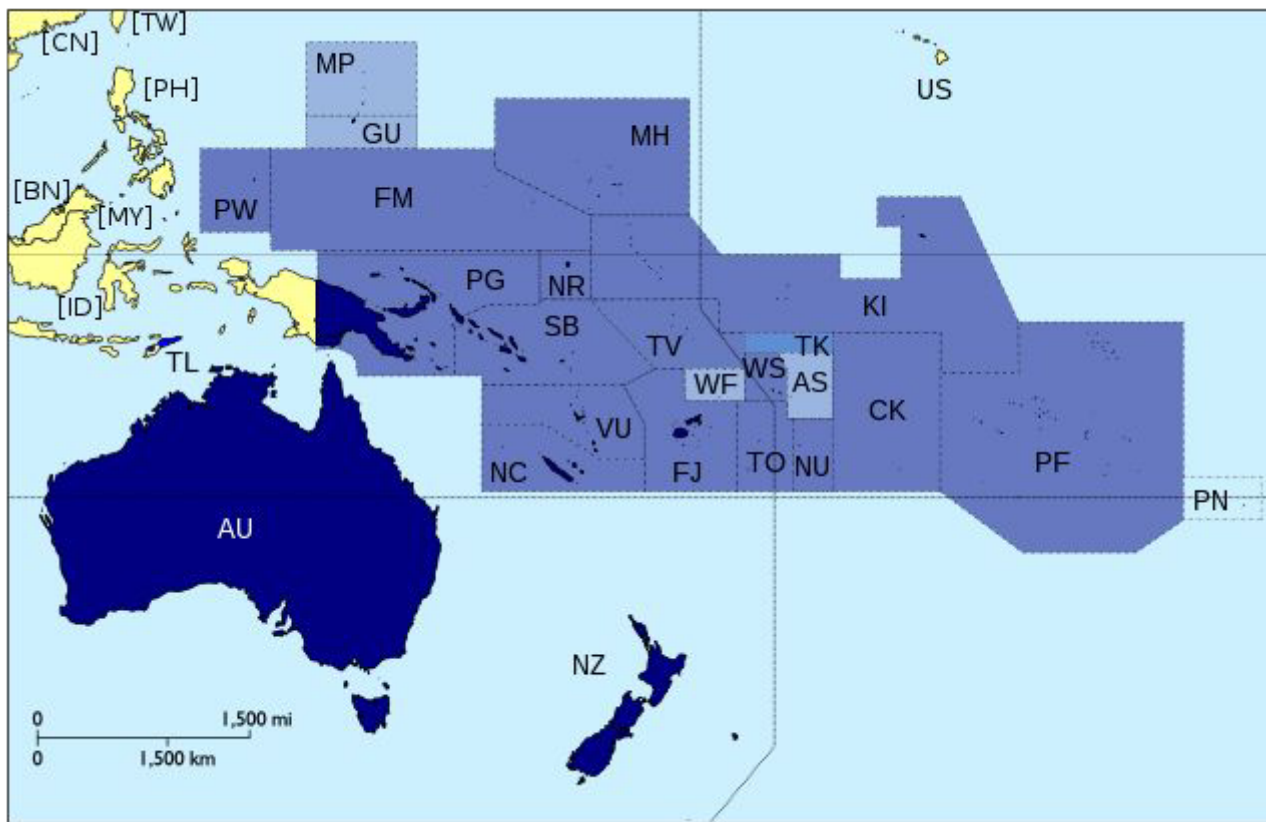
Figure V-1. Schematic of an animal cell. 1. Nucleolus; 2. Nucleus; 3. Ribosomes; 4. Vesicle; 5. Rough endoplasmic reticulum; 6. Golgi apparatus; 7. Cytoskeleton; 8. Smooth endoplasmic reticulum; 9. Mitochondrion; 10. Vacuole; 11. Cytosol; 12. Lysosome; 13. Centriole; 14. Cell membrane.

Source: Wikimedia commons at https://commons.wikimedia.org/wiki/File:Animal_Cell.svg

太平洋諸島フォーラム (PIF)



PACIFIC ISLANDS FORUM



Bioaccumulation

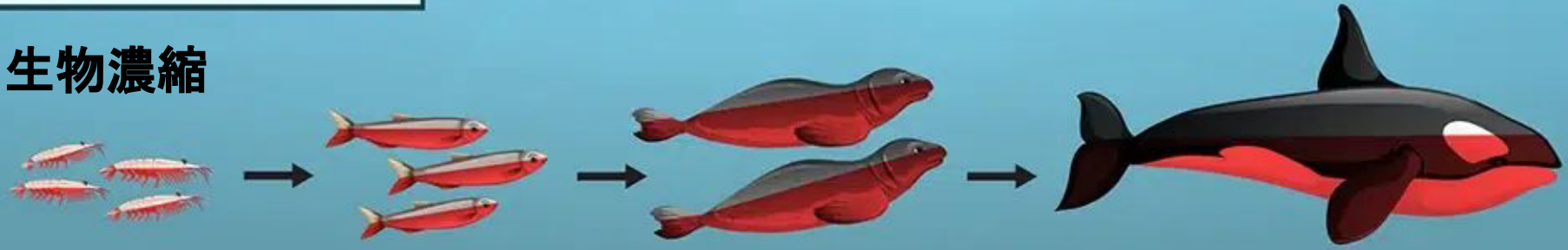
生物蓄積



時間的經過
Time

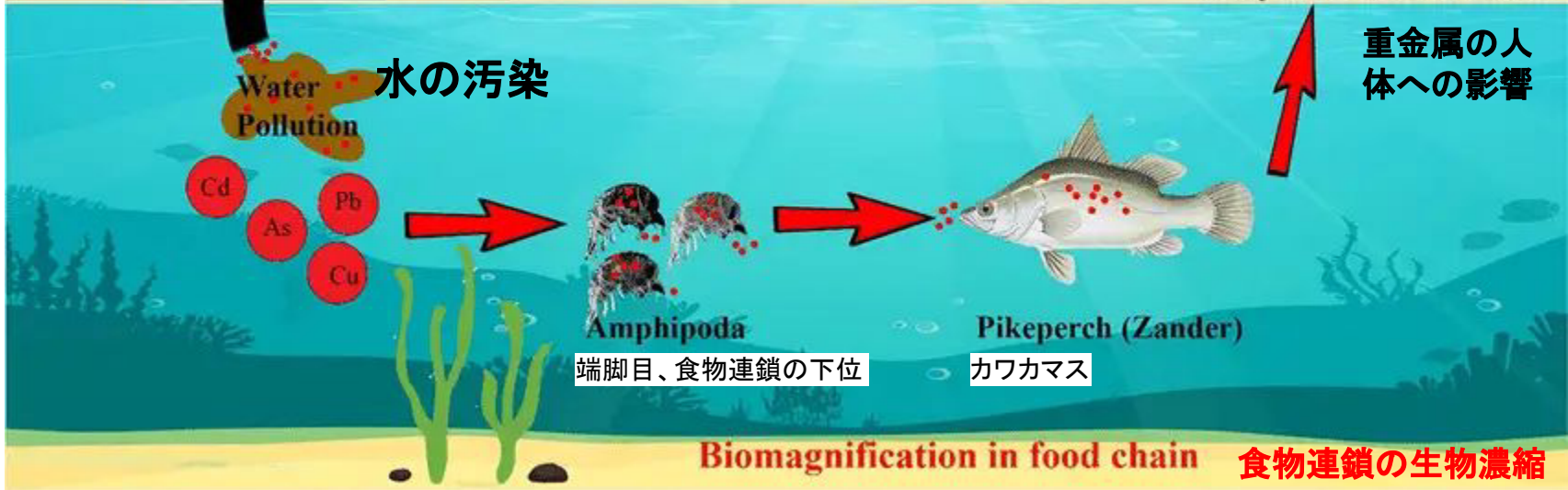
Biomagnification

生物濃縮





Heavy metals effects on humans



産業活動

Industrial Activities

水の汚染

Water
Pollution

Cd
As
Pb
Cu

Amphipoda

端脚目、食物連鎖の下位

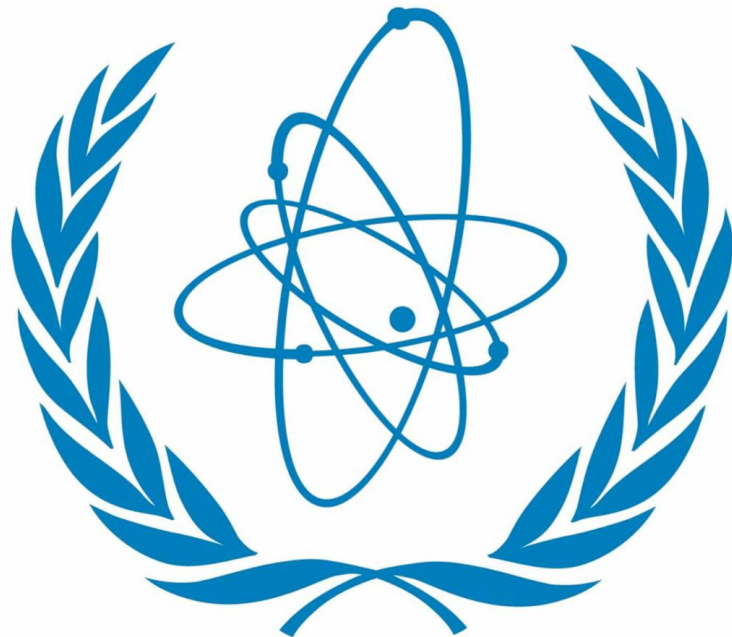
Pikeperch (Zander)

カワカマス

重金属の人体への影響

Biomagnification in food chain

食物連鎖の生物濃縮



IAEA 国際原子力機関

International Atomic Energy Agency



FUKUSHIMA WATER REPORT 福島(汚染)水報告

