

Educational Toolkit: The polluted Arctic

Author: Dagmara BOŻEK, dbozek@igf.edu.pl

Worksheet–teacher version

Ad 1.

Helpful resources:

- Indigenous people: <https://polarpedia.eu/en/indigenous-people/>
- Siberian people: <https://polarpedia.eu/en/siberian-people/>
- Demography of indigenous people of the Arctic:
https://www.researchgate.net/figure/Map-Demography-of-indigenous-people-of-the-Arctic-based-on-linguistic-groups-GRID_fig1_328981212

Ad 2.

Example: section 'Today' on the website: <https://www.arcticwwf.org/wildlife/polar-bear/polar-bear-population/>

Ad 3.

First answer

Ad 4.

Albedo, helpful resource: <https://polarpedia.eu/en/albedo-5/>

Ad 5.

Ocean currents, precipitation, river discharge, deposition in ice, permafrost, emissions transported by air

Ad 6.

Helpful resources:

- Bioaccumulation: <https://polarpedia.eu/en/bioaccumulation/>
- Biomagnification : <https://polarpedia.eu/en/biomagnification/>

Bioaccumulative – characteristic of a chemical substance, which concentration is higher within the organism compared to its surroundings (air or water)

Ad 7.

Greenhouse gases, climate change, mining, thawing permafrost, harmful microorganisms in the permafrost, PCBs, wildfires, hunting

Ad 8.

Microplastic pollution

Ad 9.

- A. Average sea surface microplastic value: $(1,287-0,012):2 = 0,6375 \text{ Nm}^{-3}$
- B. Average water column microplastic value: $(375-0,28):2 = 187,36 \text{ Nm}^{-3}$
- C. Average snow microplastic value: $(14\,400\,000-0):2 = 7\,200\,000 \text{ Nm}^{-3}$
- D. Average sea ice plastic debris value: $(1,200-0):2 = 0,6 \text{ Nm}^{-3}$
- E. Average sea ice microplastic value: $(12\,000\,000-31,75):2 = 5\,999\,984,125 \text{ Nm}^{-3}$

NOTE: Average value AVG = (MAX – MIN):2

Unit: N/m^3 = pieces per cubic meter (according to <https://litterbase.awi.de/litter> data the graphic is referring to)

Sort average values (A, B, C, E):

$$A < B < E < C$$