Chemical Pollutants Harm to Biodiversity

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Reduction of Persistent Organic Pollutants (POPs)

UNFCC calls for the development of National Implementation Plans (NIPs) that address the tracking and reduction of Persistent Organic Pollutants (POPs) in addition to emissions reductions. Paragraph 1, Article 7 of the Stockholm Convention calls for the development of baseline assessments, multi-stakeholder action teams, and action plans. Funding is accessible via the Global Environment Facility (GEF). NIPs should identify the present situation, local POPs inventories, affordable assessment methods and alternatives, priorities for National Action. African countries should prioritize POPs reduction as a COP27 target.

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Key Messages

a. Governments should invest in monitoring, tracking and regulation of imports and exports and disposal of chemicals to reduce the prevalence of toxic chemicals in the environment and in line with the UNGA resolution recognizing the right to a clean, healthy, and sustainable environment as a human right.

b. Toxic chemicals have adverse cross-general health impacts (e.g. nervous system damage, cancer) across all species, human and non-human. High priority POPS reduction chemicals across Africa should include DDT, PBDEs and PCBs.

c. Green house gas emissions and toxic chemicals combined are recognized causes of biodiversity loss that affect pollinator species and, by extension, our food security and agricultural systems, including marine life.

POPs and Biodiversity

Human activities are a recognized cause of biodiversity loss. Encroachment into wildlife reserve areas, illegal poaching, over grazing, over hunting, plastic waste and micro-plastics, clearing of forest and plants to build human settlements. There is also a more invisible cause of biodiversity loss – Persistent Organic Pollutants (POPs) which are banned by the Stockholm Convention but still prevalent in many countries. Biological endocrine systems for all species are driven by chemical reactions. Pesticides, also known as Plant Protection Products (PPPs), don't just repel insects, they are designed to kill insects by poisoning them. The problem is that many species are communal in nature. Hence, the pesticide does not poison just one bee or just one beehive, the poison is spread between different colonies and is inherited.

[1] A member of the African Civil Society Biodiversity Alliance (ACBA)


Photo credit:Meyer Franklin

Most pesticides impede the ability of bees to fly properly, recognize the correct plants for pollination, and recognize the right mating partner. Once the pollinator function of bees gets disrupted, the reproductive cycles of plants also get disrupted.

Rachel Carson's Silent Spring, written in 1962, is a landmark book documenting the harmful effects of DDT which was banned in 1972. The awareness she raised led to research on the effects of DDT in humans with results showing equally harmful side effects such as vomiting, tremors, problems with movement, and possibly cancer. Even though DDT was banned 50 years ago, DDT is still found in human female breast milk around the world, including countries that implemented the ban immediately. Research trends are pointing to the bioaccumulation of DDT in the environment as the possible cause. In other words, similar to nuclear radiation, soil, water and plants retain DDT contamination for more than 50 years after use of DDT has stopped. Pesticides are not the only chemicals associated with pollinator species collapse. Several studies are linking rising CO2 levels. High temperatures have negative effects on pollinator species lifespans. When CO2 levels are high, plants produce less protein.

Bees get protein from plants through pollination. Humans also get less protein from plants which makes the food security risk double (less pollination for higher plant yields and less protein in the plants that do grow).

The list of chemical problems does not end with pesticides and air pollution. Commonly used industrial chemicals such as flame retardants, polybrominated diphenyl ethers (PBDEs), and polychlorinated biphenyls (PCBs), commonly found in electric equipment, plasticizers, and paints, are neurotoxins (endocrine disruptors) for both humans and other biological lifeforms including fish. When textiles, electronics, and paints are burned or dumped in waterways and landfills, both PBDEs and PCBs start to leach into soil and water which then gets into our food. Climate Change variability has adverse effects on agricultural systems. Chemical pollutants such as PBDEs and PCBs worsen those effects by accelerating ecosystem deterioration and adverse human health outcomes. UNFCC promotes the development National Implementation Plans (NIPs) for POPs. Responsible chemicals management is not currently a priority for many African countries. Simple actions such as tracking imports, exports and disposal of chemicals, especially banned POPs would be a progressive move towards quantifying the prevalence and severity of toxic chemicals in the environment. Unless we address all forms of pollutants as part of Climate Action, we may risk solving visible problems only to be killed by invisible ones.

Additional Reading

http://chm.pops.int/TheConvention/ThePOPs/ListingofPOPs/tabid/2509/Default.aspx

https://www.somersetwildlife.org/sites/default/files/2019-11/FULL%20AFI%20REPORT%20WEB1_1.pdf

https://www.sierraclub.org/sierra/long-lasting-health-impacts-ddt-highlighted-new-study

https://pubmed.ncbi.nlm.nih.gov/10342677/

https://www.wri.org/insights/month-climate-science-february-march-2020-carbon-sinks-shrink-bumble-bees-decline

https://e360.yale.edu/features/bee_collapse_co2_climate_change_agriculture

https://www.fao.org/news/story/en/item/1194910/icode/

https://www.sciencedirect.com/science/article/pii/S0960982219307961

https://www.wired.com/2009/07/pbde/

https://oceanservice.noaa.gov/facts/pcbs.html

https://www.sciencedirect.com/science/article/pii/S0045653512013471

https://unfccc.int/sites/default/files/nips_pops.pdf