

**Top Ten of Biggest
Environmental Polluters
According to Data of Integrated
Pollutant Release and Transfer Register
(PRTR) of Bosnia
and Herzegovina**

Report for the year

2015



Groups of chemicals covered in the register sorted by dangerous health effects

1. Carcinogenic and probably or potentially carcinogenic substances
2. Carcinogenic substances
3. Reprotoxic substances (except carbon monoxide)
4. Carbon monoxide (CO)
5. Mutagenic substances
6. Greenhouse gases
7. Gases causing acid rain
8. Polycyclic aromatic hydrocarbons (PAH)
9. Particulate matter (PM10)



Table 1

Carcinogenic and Probably or Potentially Carcinogenic Substances

The order of factories according to the quantity of substances and their compounds classified by the International Agency for Research on Cancer (IARC) as **carcinogenic (1)**, **probably carcinogenic (2A)**, and **potentially carcinogenic (2B) to humans**, contained in total releases into air according to the data published in PRTR for the year 2015. **Group 1** covers the following chemical substances or their compounds reported in PRTR: *Arsene, asbestos, benzene, ethylene oxide, chromium, cadmium, polychlorinated biphenyls (PCB), and vinyl chloride*. **Group 2A and Group 2B** covers the following chemical substances and their compounds reported in PRTR: *1,2,3,4,5,6-hexachlorocyclohexane (HCH), 1,2-dichlorethane (DCE), bis(2-ethylhexyl) phthalate (DEHP), dichlorodiphenyltrichloroethane (DDT), dichloromethane (DCM), ethylbenzene, heptachlor, hexachlorobenzene (HCB), chloroalkanes (C10-13), chlordan, chlordecone, lindane, mirex, naphthalene, nickel, lead, mercury, tetrachlorethylene, tetrachloromethane (TCM), toxaphene, trichlorethylene, and trichlormethane*.

Order	Organization/company	Factory	Quantity [kg]
1.	Bosnalijek d.o.o. Sarajevo	Pharmaceutical and chemical industry	280,500
2.	Nexe d.o.o. Sarajevo	Stone pit Duboki	10,000
3.	ArcelorMittal Zenica d.o.o.	Department Aglomeracija	16.7



We consider the first two figures of table 1 to be a mistake. The reported emission are unusually high given the type of facility. We did not succeed to verify the figures as the authorities responsible did not answer on our request.



Table 2 Carcinogenic Substances

The order of factories according to the quantity of substances and their compounds classified by the International Agency for Research on Cancer (IARC) as **carcinogenic (1)**, contained in total releases into air according to the data published in PRTR for the year 2015. Group 1 covers the following chemical substances or their compounds reported in PRTR: *Arsene, asbestos, benzene, ethylene oxide, chromium, cadmium, polychlorinated biphenyls (PCB), and vinyl chloride.*

Order	Organization/company	Factory	Quantity [kg]
1.	Bosnalijek d.o.o. Sarajevo	Pharmaceutical and chemical industry	280,500
2.	Nexe d.o.o. Sarajevo	Stone pit Duboki	10,000
3.	ArcelorMittal Zenica d.o.o.	Department Aglomeracija	4460.7



We consider the first two figures of table 2 to be a mistake. The reported emission are unusually high given the type of facility. We did not succeed to verify the figures as the authorities responsible did not answer on our request.



Table 3

Reprotoxic Substances (except carbon monoxide)

Industrial plants releasing the greatest amounts of **reprotoxic** substances (affecting reproduction), **except carbon monoxide, in the year 2015**. The classification of the substances as **reprotoxic** is based on the evaluation of the Environmental Protection Agency (EPA) for the state of California¹ and on the toxicological profile of the substances listed on the website of Integrated Pollutant Release and Transfer Register. Therefore, reprotoxic substances cover the following substances: **1,2,3,4,5,6-hexachlorocyclohexane (HCH), arsene, benzene, benzo(ghi)perylene, dichlorodiphenyltrichloroethane (DDT), bis(2-ethylhexyl) phthalate (DEHP), diuron, ethylene oxide, fluoranthene, hexachlorobenzene, chlordecone, chromium, cadmium, mirex, nonylphenol and nonylphenoethoxylate, organic compounds of tin, carbon monoxide, pentachlorobenzene, polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), polychlorinated dioxines + furans (PCCD/F), mercury, simazine, toluene, toxaphene. tributyltin and its compounds, trifenylytin and compounds, and xylenes.**

* State of California EPA - Office of Environmental Health Hazard Assessment 2006: Safe Drinking Water and Toxic Enforcement Act of 1986 - Chemicals Known to the State to Cause Cancer or Reproductive Toxicity, 29.IX.06. Proposition 65. Available at: http://www.oehha.ca.gov/prop65/prop65_list/Newlist.html#list

Order	Organization/company	Factory	Quantity [kg]
1.	Bosnalijek d.o.o. Sarajevo	Pharmaceutical and chemical industry	280,500
2.	Nexe d.o.o. Sarajevo	Stone pit Duboki	10,000
3.	JP Autoceste FBiH	Construction of a motorway on the Vc corridor	4,449.3
4.	Natron-Hayat.d.o.o. Maglaj	Paper manufacture	1,395
5.	Interkomerc d.o.o. Mostar	Processing of secondary raw materials	711.2
6.	ŽGP	Stone pit Široke stijene	605
7.	ArcelorMittal Zenica d.o.o.	Department Aglomeracija	487.2
8.	A3 d.o.o. Široki Brijeg	Concrete manufacture	399.9
9.	Gramat d.o.o.	Stone pit Bukovača	263.7
10.	Hidrogradnja Sigma d.o.o. Sarajevo	Stone pit Hadžići	195

We consider the first three figures of table 3 to be a mistake. The reported emission are unusually high given the type of facility. We did not succeed to verify the figures as the authorities responsible did not answer on our request.

1 2 3 4 5 6 7 8 9 10

Table 4

Carbon Monoxid (CO)

Industrial plants releasing the greatest amount of reprotoxic **carbon monoxide** in the year 2015.

Order	Organization/company	Factory	Quantity [kg]
1.	ArcelorMittal Zenica d.o.o.	Department BOF čeličana	796,300
2.	Tvornica cementa Kakanj d.d.	Cement factory	573,318



Table 5

Mutagenic Substances

The order of factories sorted according to the quantity of substances and their compounds classified as **mutagenic** (1), contained in total releases **into air** according to the data published in PRTR for the 2015. The classification of the substances as mutagenic is based on the toxicological profile of the substances listed on the website of PRTR. The group of mutagenic substances covers the following chemical substances or their compounds reported in PRTR: *Alachlor, anthracene, 1,2-dichloroethane, diuron, ethylene oxid, phenols, mirex, polycyclic aromatic hydrocarbons (PAH), trifluralin, trichloroethylene, and vinyl chloride.*

Order	Organization/company	Factory	Quantity [kg]
1.	JP Autoceste FBiH	Construction of a motorway on the Vc corridor	4,449.3
2.	Natron-Hayat.d.o.o. Maglaj	Paper manufacture	1,395
3.	Interkomerc d.o.o. Mostar	Processing of secondary raw materials	711
4.	ŽGP	Stone pit Široke stijene	605
5.	ArcelorMittal Zenica d.o.o.	Department Aglomeracija	470.5
6.	A3 d.o.o. Široki Brijeg	Concrete manufacture	399.9
7.	Gramat d.o.o.	Stone pit Sklop	263.7
8.	Hidrogradnja Sigma d.o.o. Sarajevo	Stone pit Hadžići	195
9.	TBG BH d.o.o. Kakanj	Branch Lukavac – Betonara	191.8
10.	Pullcom BiHinter d.o.o	Plant 1	133



Table 6

Greenhouse Gases

The order of factories sorted by the quantity of **greenhouse gases** (*carbon dioxide, nitrous oxide, methane*) in terms of their potential to contribute to the greenhouse effect in total releases **to air** according to the data published in PRTR for the year 2015. The figures are in tons. First places are affected by the emissions of carbon dioxide only.

Order	Organization/company	Factory	Quantity [kg]
1.	JP Elektroprivreda BiH	Tuzla thermal power plant, Block 6	1,338,551
2.	JP Elektroprivreda BiH	Tuzla thermal power plant, Block 4	1,225,515
3.	JP Elektroprivreda BiH	Tuzla thermal power plant, Block 5	1,117,278
4.	JP EP BIH, TE Kakanj	Block 6	961,867
5.	JP EP BIH, TE Kakanj	Block 7	943,108
6.	JP EP BIH, TE Kakanj	Block 5	496,958
7.	Fabrika cementa Lukavac d.d.	Cement factory	280,000
8.	ZD Rudnik mrkog uglja Zenica d.o.o.	Mine Raspotočje	139,631
9.	Regionalna deponija Mošćanica	Regional sanitary landfills	29,317
10.	ZD Rudnik mrkog uglja Zenica d.o.o.	Mine Stranjani	23,554



Table 7

Gases Causing Acid Rain

The following industrial plants released the greatest amount of **gases causing the acid rain** (*ammonia, nitrogen oxides, sulphur oxides, hydrogen fluoride oxides, and hydrogen chloride oxides*) in the year 2015:

Order	Organization/company	Factory	Quantity [kg]
1.	JP EP BIH, TE Kakanj	Block 7	31,815
2.	JP Elektroprivreda BiH	Tuzla thermal power plant, Block 6	27,700
3.	JP Elektroprivreda BiH	Tuzla thermal power plant, Block 4	20,789
4.	JP EP BIH, TE Kakanj	Block 5	19,443
5.	JP Elektroprivreda BiH	Tuzla thermal power plant, Block 5	19,028
6.	JP EP BIH, TE Kakanj	Block 6	18,172
7.	ArcelorMittal Zenica d.o.o.	Department Energetika	4,026
8.	Sisecam Soda d.o.o. Lukavac	Industrial inorganic chemistry	2,306
9.	Natron-Hayat.d.o.o. Maglaj	Paper manufacture	2,151
10.	ArcelorMittal Zenica d.o.o.	Department Koksara	979

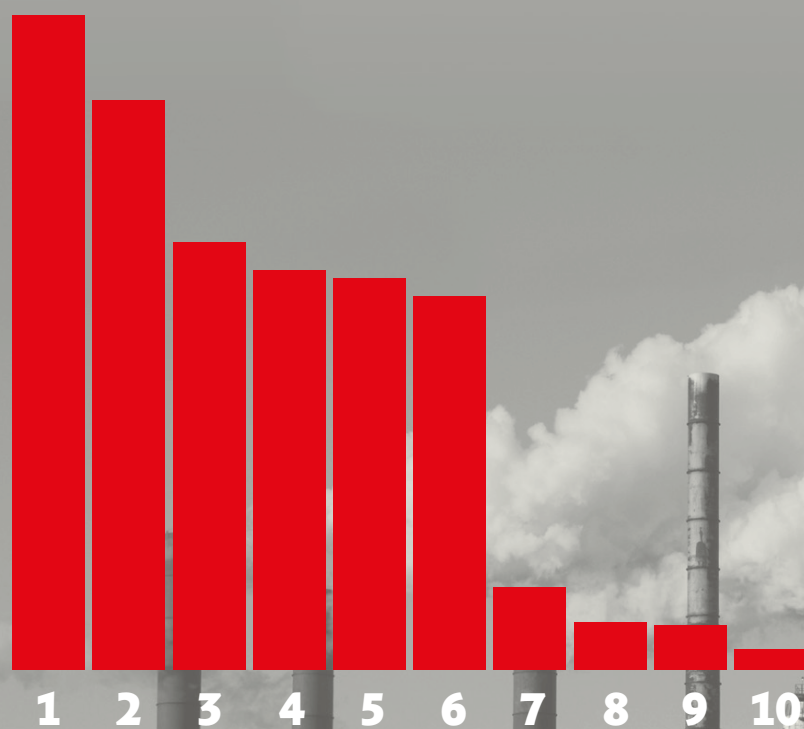


Table 8

Polycyclic Aromatic Hydrocarbons (PAH)

The following industrial plants released the greatest amount of **polycyclic aromatic hydrocarbons (PAH)** into the air in the year 2015.

Order	Organization/company	Factory	Quantity [kg]
1.	JP Autoceste FBiH	Construction of a motorway on the Vc corridor	4,449.3
2.	Natron-Hayat.d.o.o. Maglaj	Paper manufacture	1,395
3.	Interkomerc d.o.o. Mostar	Processing of secondary raw materials	711.2
4.	ŽGP	Stone pit Široke stijene	605
5.	ArcelorMittal Zenica d.o.o.	Department Aglomeracija	470.5
6.	A3 d.o.o. Široki Brijeg	Concrete manufacture	399.9
7.	Gramat d.o.o.	Stone pit Sklop	263.7
8.	Hidrogradnja Sigma d.o.o. Sarajevo	Stone pit Hadžići	195
9.	TBG BH d.o.o. Kakanj	Branch Lukavac – Betonara	191.8
10.	Pullcom BiHinter d.o.o	Plant 1	133

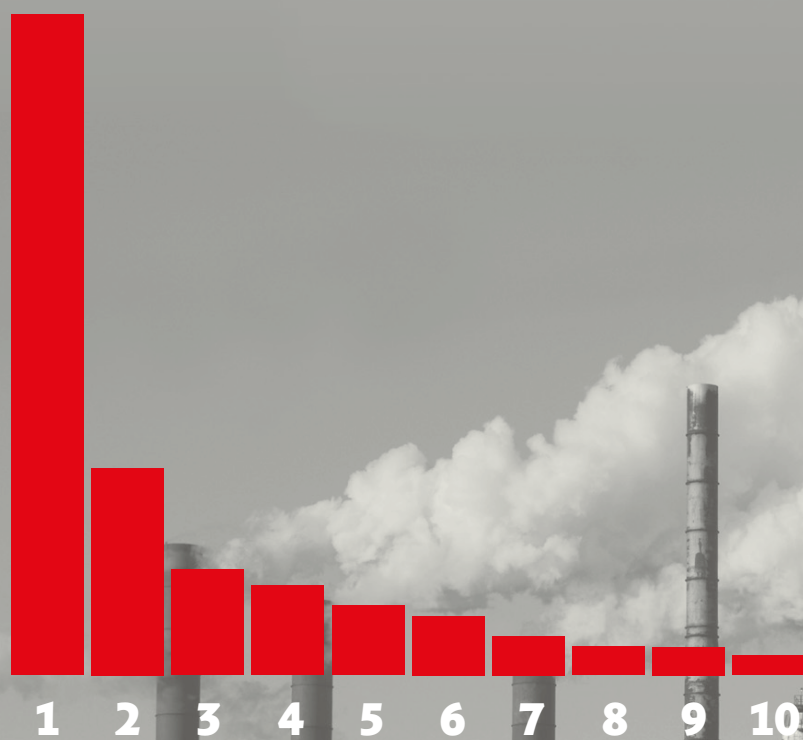
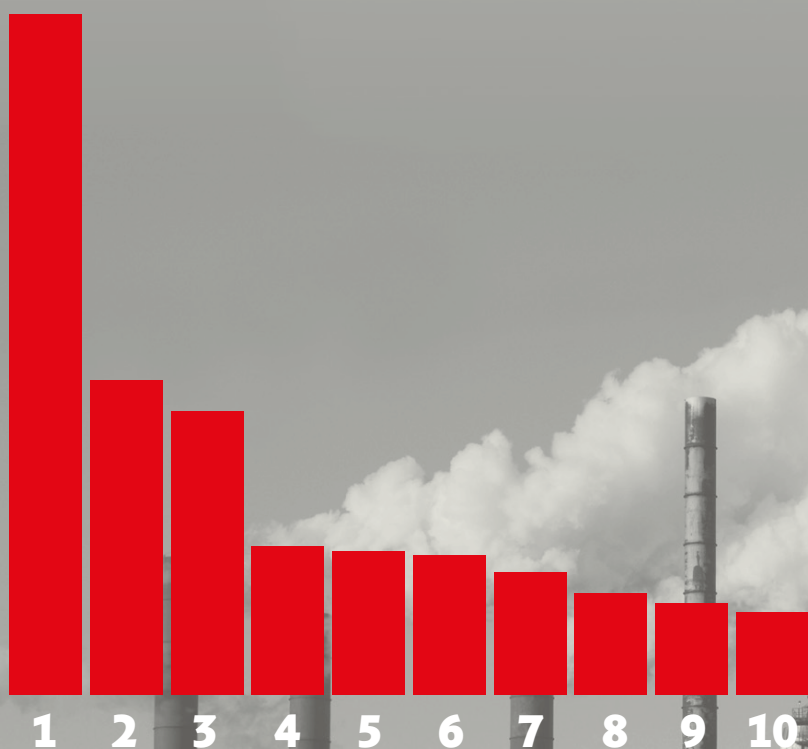


Table 9

Particulate Matter (PM10)

The following industrial plants released the greatest amount of **particulate matter into the air** in the year 2015:

Order	Organization/company	Factory	Quantity [kg]
1.	ArcelorMittal Zenica d.o.o.	Department Aglomeracija	903,500
2.	JP Elektroprivreda BiH	Tuzla thermal power plant, Block 4	418,000
3.	JP Elektroprivreda BiH	Tuzla thermal power plant, Block 5	376,400
4.	ArcelorMittal Zenica d.o.o.	Department Energetika	197,000
5.	ArcelorMittal Zenica d.o.o.	Blast furnace	191,000
6.	ArcelorMittal Zenica d.o.o.	Department Koksara	185,800
7.	ArcelorMittal Zenica d.o.o.	Department BOF čeličana	162,600
8.	JP Elektroprivreda BiH	Tuzla thermal power plant, Block 6	135,000
9.	Natron-Hayat.d.o.o. Maglaj	Paper manufacture	121,200
10.	Sisecam Soda d.o.o. Lukavac	Industrial inorganic chemistry	109,000



Comments:

Values exceeding safe threshold limits for Bosnia and Herzegovina are related to only 38 factories in Bosnia and Herzegovina and cover only 13 substances (cadmium, lead, benzene, PAH, HCl, HF, SO₂/SO_x, NO₂/NO_x, CO, methane, CO₂, PM10, PCDD/F).

For comparison: in the Czech Republic, 1,779 facilities reported emissions in 2015 and the reports included 39 atmospheric pollutants, 29 water pollutants, 0 soil pollutants, 33 substances of transfers in wastewater, and 24 substances of transfers in wastes.

In the Czech Republic, all companies report their emissions in the event of their exceeding the threshold limit. Transfers in wastes are reported as well. Compared to E-PRTR (The European Pollutant Release and Transfer Register), the Czech factories also report styrene and formaldehyde emissions. The data for the Czech Republic is publicly available at: <http://www.irz.cz>.

