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Burning waste in cement kilns: the case of Lafarge Trbovlje

Case Study

August 2018 – Eko krog

The case of the Lafarge Trbovlje cement plant

Burning waste in cement kilns is a widespread practice, but what impact does it have on citizens' health and the environment?
The case of the Lafarge Trbovlje cement plant highlights a number of controversial issues in the area of waste incineration and co-incineration.
As hazardous emissions threatened citizens' health in the area, civil society groups experienced restrictions to access environmental information and participate in the decision making process.
After a successful legal battle that lead to the closure of the plant to fulfil national and EU environmental criteria, the local environmental group Eko Krog lays out the case and formulates recommendations to prevent similar situations from happening again.

A region affected by air pollution

The Zasavje region (with a population of 57,5670) is one of the most environmentally degraded areas in Slovenia, a legacy of two centuries of heavy industry.
Geographically, the Zasavje region has deep, narrow, poorly ventilated valleys. Meteorological inversions often occur, trapping dust particles and other industrial pollutants in the valleys and surrounding hills.
The region has a cancer mortality rate that is 6% higher than the rest of the country, with the region's children being 2.2 times more likely to suffer from chronic respiratory disease than the national average.

Lafarge Trbovlje cement plant, showing meteorological inversion (2014)

Petcoke, waste co-incineration and the legal battle over a contested permit

The cement plant in Trbovlje was established in 1876, close to abundant coal deposits, which provided it with a cheap source of energy. A new kiln was put into production in 1972, with the capacity to produce 1,000 tons of clinker per day. In 2002, the Lafarge group bought the plant and changed its fuel from coal to petcoke, effectively increasing SO2 emissions by 55%, benzene by 256%, and TOC by 77%[1].

In 2009, the Ministry of the Environment (MoE) issued the first Integrated Pollution Prevention and Control (IPPC) permit for waste co-incineration, allowing the plant to substitute 70-80% of its fuel with waste (including hazardous fractions).

Under this permit, the plant was also allowed four times more nitrogen oxide (NOx) emissions, three times more particulate matter (PM10), five times more benzene and 20 times more Total Organic Carbon (TOC) emissions than dedicated waste incinerators.

Table 1: Types of waste allowed for co-incineration in Lafarge Trbovlje, 2009-2011

Types of waste allowed for burning by permit 35407-104/2006-195 of 23 July for Lafarge cement Trbovlje.2 ELW code	Description	Annual quantity (t)
19 12 10	Combustible waste – waste plastics	15,000
16 01 03	End-of-life tyres	6,000
13 01 10	Mineral-based non-chlorinated hydraulic oils	3,000
13 01 11	Synthetic hydraulic oils	300
13 01 13	Other hydraulic oils	300
13 02 05	Mineral-based non-chlorinated engine, gear and lubricating oils	5,000
13 02 06	Synthetic engine, gear and lubricating oils	300
13 03 07	Mineral-based non-chlorinated insulating and heat transmission oils	400
13 03 08	Synthetic insulating and heat transmission oils	300
13 03 10	Other insulating and heat transmission oils	100

[1] Zavod za zdravstveno varstvo Maribor, Inštitut za varstvo okolja: Emisije snovi v zrak iz peči za žganje klinkerja v podjetju Cementarna Trbovlje d.d,; October 2002; December 2003.

[2] Ministrstvo za okolje in prostor, Agencija za okolje, *Okoljevarstveno dovoljenje za Lafarge cement*, 8 April 2009, see http://www.ekokrog.org/wp-content/uploads/2009/04/okoljevarstveno_dovoljenje_1.pdf.

13 04 01	Bilge oils from inland navigation	100
13 04 02	Bilge oils from jetty sewers	100
13 04 03	Bilge oils from other navigation	500
13 05 06	Oil from oil/water separators	1,000
13 08 02	Other emulsions	300

Despite the area's specific geographical features, the permit was based on the assessment of a 500m impact area around the plant's chimney,[3] which excluded all potential third-party participants from IPPC proceedings. Only Uroš Macerl, a local farmer and member of the environmental association Eko krog, was included in the IPPC procedure, due to the fact that he owned some land inside the 500m radius. Concerned about the increased emissions, Eko krog applied to the Administrative Court of the Republic of Slovenia for a judicial review of the administrative act granting the IPPC permit. The application was successful, and, in February 2011, the Administrative Court revoked the IPPC permit[4] for waste co-incineration in Lafarge Cement Trbovlje.

In 2012, Lafarge re-applied for an IPPC permit for waste co-incineration at the site.[5] The new proposal excluded all third parties from the IPPC procedure by limiting the impact area to the outer limits of its courtyard.

(Cartoon by Dušan Kastelic)

[3] Eko krog, *Zaničljiv odnos do javnosti na primeru izdaje okoljevarstvenega dovoljenja Lafarge Cementu*, 12 October 2010, see: http://www.ekokrog.org/2010/10/12/zanicljiv-odnos-do-javnosti/.
[4] Eko krog, *Okoljevarstveno dovoljenje Lafargu razveljavljeno!*, 4 March 2011, see: http://www.ekokrog.org/2011/03/04/okoljevarstveno-dovoljenje-lafargeu-razveljavljeno/.
[5] Eko krog, *Karikatura od vplivnega območja*, 27 June 2012, see : http://www.ekokrog.org/2012/06/27/karikatura-od-vplivnega-obmocja/.

Eko krog again contested the permit, this time with the support of two national NGOs (Focus and PIC), each with the legal status of operating in the public interest.

The legal battle lasted until 2014, when the Administrative Court finally revoked the IPPC permit for the Lafarge Trbovlje plant. The Court ruled that the IPPC permit granted to Lafarge was based on its existing pre-IPPC permits, and it should not have used petcoke as a fuel. It also stated that the plant should not have produced more than 1000 tonnes of clinker per day, and that emissions monitoring should have been more rigorous. Despite the decision of the Court, the company continued to produce cement using petcoke as fuel.

Finally, in February 2015, the European Commission took Slovenia to court[6] '*for its failure to license industrial installations that are operating without permits. Such permits should only be issued if a number of environmental criteria are met. (...) The Commission is asking for a daily penalty payment of EUR 9,009 from today until the obligations are fulfilled and a lump sum of EUR 1,604,603*'.

Lafarge Cement Trbovlje stopped cement production in March 2015.

Restricted access to environmental data

For over 10 years, Eko krog has tried to obtain the official source emissions data from Lafarge Cement Trbovlje, the Slovenian Environment Agency (SEA) and the Ministry of Environment and Spatial Planning, even asking the Commissioner for Access to Public Information and the Ombudsman to intervene. After several years of insisting on the right to access public information, Eko krog was provided with some of the source emissions monitoring data. Although it was never given access to the source off-site measurements, Eko krog nevertheless managed to obtain emissions and off-site monitoring data from webpages or other sources. In several cases the data were removed or adjusted as soon as they were published by Eko krog or the media.

In October 2010, the SEA published emissions data for major national polluters, including Lafarge Cement Trbovlje. At the same time, Eko krog published data[7] emphasising the large quantities of benzene emitted from the cement plant. In February 2011, the SEA adjusted the data, claiming there had been a multiplication error.

[6] European Comission, *Commission takes Slovenia back to Court for failure to issue industrial permit for a major cement factory and asks for fines*, Press Release, 26 February 2015, see: http://europa.eu/rapid/press-release_IP-15-4492_en.htm.

[7] Eko krog, *Benzenski rekorder Lafarge*, 18 October 2010, see: http://www.ekokrog.org/2010/10/18/benzenski-rekorder-lafarge/.

Table 2: Lafarge Cement Trbovlje emissions data for 2009, as published by the SEA in October 2010 and February 2011

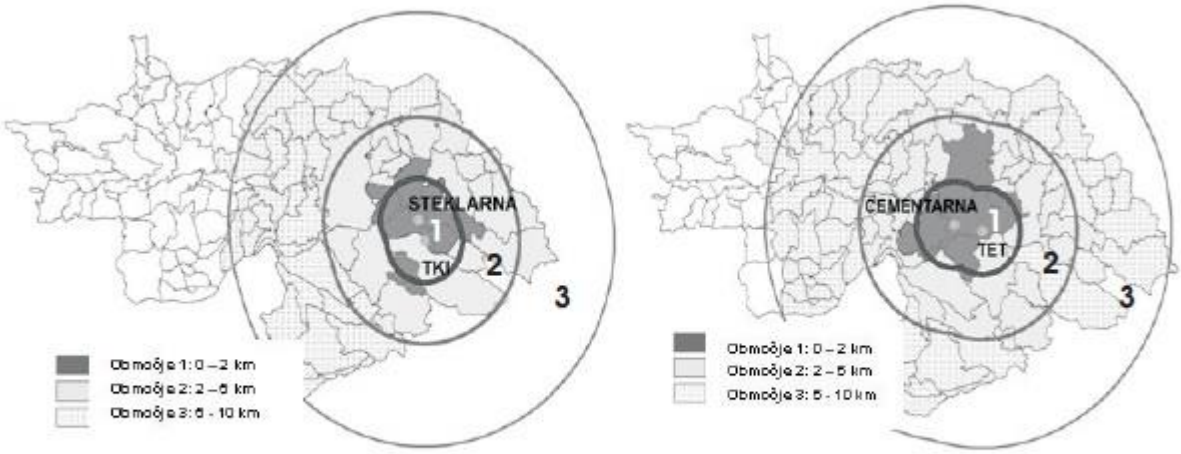
Pollutant [kg/y]	October 2010	February 2011
Ammonia (NH3)	39,868.00	19,200.00
Inorganic compounds of chlorine, if they are not listed in the first hazard group, expressed as HCl	171.00	174,655.30*
Copper and its compounds, expressed as Cu	13.28	5.16
Benzene	2,614.80	1,269.60
Total dust (PM10)	11,817.00	12,022.00
Nitrogen oxides (NO and NO2), expressed as NO2	279,505.00	291,069.00
Fluorine and its compounds, expressed as HF	0.00	0.00
Cadmium and its compounds, expressed as Cd	0.77	0.25
Chromium and its compounds, expressed as Cr	30.85	8.95
Manganese and its compounds, expressed as Mn	31.69	11.34
Nickel and its compounds, expressed as Ni	45.44	16.09
Carbon monoxide (CO)	766,372.19	781,704.81
Organic compounds, expressed as total organic carbon (TOC)	62,789.00	63,616.80
Lead and its compounds, expressed as Pb	34.72	13.27
Thallium and its compounds, expressed as Tl	5.27	1.73
Mercury and its compounds, expressed as Hg	11.05	4.07
Sulphur oxides (SO2 and SO3), expressed as SO2	5,100.00	4,359.00
SUM Cd, Tl	6.04	1.99
SUM Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V, Sn	119.15	52.59

Source: SEA
** this entry was later changed by the SEA, explaining that it was a typing error*

Environmental and health impacts

In 2008, the National Institute for Public Health and the Ministry of Health carried out a study, 'Health for Zasavje region'.[8] The study included data from the national Cancer Registry (Institute of Oncology in Ljubljana), and concluded that the residents living in close proximity to the Lafarge cement plant were at greater risk of developing cancer than the rest of the population of Zasavje. The number of cancer patients in 'Area 1' (see Figure 1 below) is significantly greater than elsewhere.

Figure 1: Geographically descriptive epidemiological study of cancer with distribution in three areas of influence around the point source of pollution (Left: Steklarna Hrastnik (glass production) and TKI (chemical industry); right: Lafarge Cement Trbovlje and Trbovlje Thermal Power Plant (coal plant))



Vir: Onkološki inštitut Ljubljana; Register raka

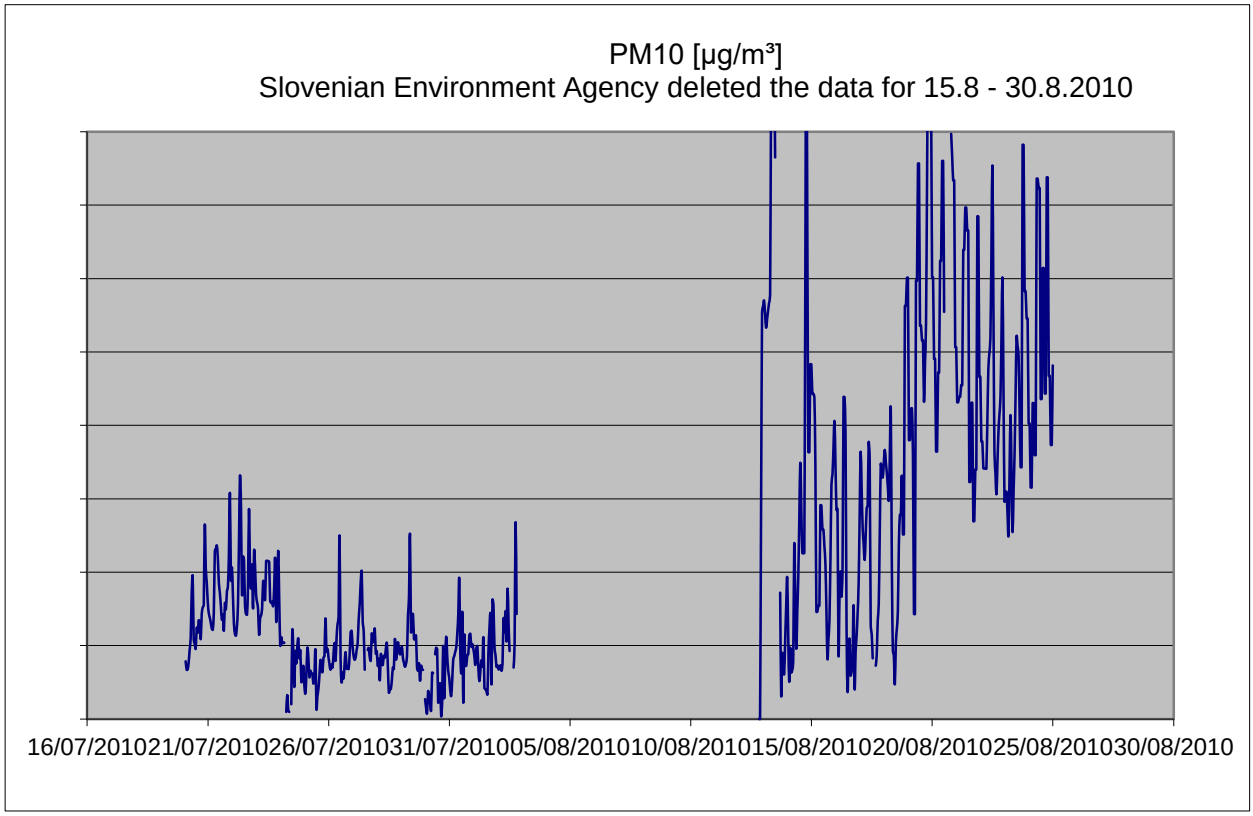
The study also evaluated the burden of chronic respiratory diseases in children in Zasavje, with the following results:

- Chronic respiratory diseases in children living in the polluted areas of the entire Zasavje region are 2.2 times more frequent than among children living in less polluted areas. The difference is statistically significant (p=0.019).

- In-depth analysis for municipalities Zagorje ob Savi and Hrastnik shows that chronic respiratory diseases in children from polluted areas are 2.5 more frequent than among children living in less polluted areas.

[8] Vudrag, Marko, 2008, *Zdravje za Zasavje,* Ljubljana, Zavod za zdravstveno varstvo Ljubljana.

Figure 2: PM10 concentrations in Trbovlje for August 2010, measured by the SEA. When Eko krog published the data on its webpage and asked the SEA for an explanation, it responded by stating that the measuring station was malfunctioning, and simply deleting the data from August 15-30. Source: SEA



Conclusions and recommendations

The case of Lafarge Trbovlje highlights a number of controversial issues in the area of waste incineration and co-incineration.

The lack of transposition and implementation of the Aarhus Convention into Slovenian legislation relates to all three pillars of the treaty: public participation, access to justice, and - as in the case of Eko krog - access to environmental information. It took Eko krog 10 years of campaigning to obtain access to the official source emissions data.

> Recommendation 1: Official source off-site measurements, together with emissions monitoring data and records, should be made available to local community and civil society. This should include data that has not been adjusted (raw data) and a record of monitoring circumstances (e.g. temperature, fuel composition, gas flow rate). Non-disclosure of such data increases the uncertainty in respect of health and environmental impacts on the local population.

Current national legislation allows industrial emitters to freely select among accredited institutions to carry out the required monitoring services and environmental impact assessments (EIA). The state

thus concedes its basic functions and control to emitters, and allows them to self-monitor. Given that industrial emitters pay for these monitoring services, it is highly likely that they are designed to favour the contracting authority.

> Recommendation 2: Some years ago, environmental NGOs proposed a change to the EIA procedure. They suggested that a company needing an assessment should pay a state tax, and one of national institutions would then independently hire an accredited organisation. A similar system could be used for monitoring services.

Current national and EU legislation allows for higher emissions from cement plants burning waste than from dedicated waste incinerators. This makes little sense from an environmental protection and human health perspective, as the total impact of hazardous substances, odour, noise and dust emissions is not in any way mitigated by the pollution source. Allowing higher emissions for co-incineration puts local residents in those areas at a disadvantage when it comes to environmental and health protection.

> Recommendation 3*:* Cement plants burning waste should respect the same total emissions levels as dedicated waste incinerators.

The current public consultation process in Slovenia restricts the participation of civil society in a number of important ways:

- Civil society is excluded from participating in the drafting of legislative amendments prior to public consultation.
- Deadlines for public consultation are too short: spanning from a few days to one month, at best.
- The documents for public consultations are not written so as to be clear to members of the public, e.g. changes are not highlighted or explained, no background information is provided on the current situation or proposed changes, and no reasons are given for those proposed changes.
- At the end of the public consultation no reason is given for the final decision, nor is there any explanation of the extent to which the comments from civil society were taken into account. The comments of NGOs, for example, are often discarded as being "unprofessional".
- The participation of civil society as a third-party participant in the environmental permit procedure is exclusively limited to NGOs with the legal status of 'operating in the public interest', a designation which requires the NGO to have been in operation for at least two years.

> Recommendation 4: The right of civil society to participate in the decision-making process should be revised to make the processes transparent and participatory. The final decision should reflect the positions of all stakeholders.

The Environment Protection Act requires large emitters to obtain an environmental permit every 10 years. In 2016, the Slovenian government amended the Act, introducing two changes that lowered the standards of environmental protection and limited public participation in decision-making:

- Higher emission levels than those required by legislation may be approved based on a self-assessed cost-benefit analysis by the emitter.
- An IPPC permit may be granted to an emitter for an unspecified length of time.[9]

The government stated that it introduced both of these changes in order to eliminate administrative economic barriers.

> Recommendation 5: Environmental protection should not be viewed as an administrative obstacle for industry. Rather, where certain industries impact environmental and human health, all stakeholders should have an equal opportunity to participate in the decision-making process. IPPC permits should not be granted for unspecified timeframes, nor should higher emissions levels be approved solely on the basis of self-assessed cost-benefit analyses, without consultation with other stakeholders.

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About Eko krog

Eko krog is a Slovenian environmental NGO, which started as a community campaign against the Lafarge cement kiln and was subsequently formally established in 2005. Eko krog aims to contribute to the development of nature conservation, environmental protection, cultural and ethical awareness in Slovenia. See http://www.ekokrog.org for more information.

About Zero Waste Europe

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We empower communities to redesign their relationship with resources, to adopt smarter lifestyles and sustainable consumption patterns and think circular.
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[9] Uradni list RS, št. 30/2016: *1264. Zakon o spremembah in dopolnitvah Zakona o varstvu okolja (ZVO-1I), stran 4233.*