International POPs Elimination Project
Fostering Active and Efficient Civil Society Participation in Preparation for Implementation of the Stockholm Convention

Policy Brief on Environment Impact Assessment of the Regional Recovery and Destruction Centre for Hazardous Waste - the Western Slovakia Region

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About the International POPs Elimination Project

On May 1, 2004, the International POPs Elimination Network (IPEN http://www.ipen.org) began a global NGO project called the International POPs Elimination Project (IPEP) in partnership with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP). The Global Environment Facility (GEF) provided core funding for the project.

IPEP has three principal objectives:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;

- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;

- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

IPEP will support preparation of reports on country situation, hotspots, policy briefs, and regional activities. Three principal types of activities will be supported by IPEP: participation in the National Implementation Plan, training and awareness workshops, and public information and awareness campaigns.

For more information, please see http://www.ipen.org

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Introduction - why this Policy brief?

NISAK, an incorporated company, would like to build a hazardous waste incineration plant in the area of company DUSLO Šaľa with an overall capacity of 30,000 tons of waste incinerated yearly. The company calls this plant the „Regional Recovery and Destruction Centre for Hazardous Waste". In order to proceed with this plan NISAK is having a report on Environmental Impact Assessment done. Major documents about the construction and environmental impact assessment are two following reports in the Slovakian language:

VAPIMK 2005: Nadregionálné centrum zhodnocovania a zneškodňovania nebezpečných odpadov - nadregión Západné Slovensko - Správa o hodnotení vplyvov na životné prostredie. Bratislava, March 2005.

Neubacher, F., Mochar, C., Janovský, M., Žúbor, V. 2005: Dodatok k Nadregionálnej zvozovej štúdii nebezpečných odpadov pre Západné Slovensko. UV&P, February 2005.

We have based our comments on data available in those two reports.

Long-term functioning of waste incinerators since 1980s and 1990s without the equipment for cleaning of POPs emissions (PCDD/F) resulted in the production and increased concentrations of these substances in the air and the environment of the Slovak Republic. For example the dioxin emissions in 1992/1994 for the municipal waste incinerator in Kosice were measured at 70-330 times higher than the EU emission limit. In February 2005 environmental NGO Friends of the Earth – SPZ found dioxins in free-range chicken eggs at 4 times the limit and PCBs at 2 times the suggested EU limit in the surroundings of the Koshice incinerator. All conditions (direction of prevailing winds, so called footprint of dioxins...) showed that the main source of dioxins in these eggs was the incinerator of municipal waste.

The elimination of the dioxins does not rest on the installation of the appropriate filters in the waste incinerator. In addition, modern incinerators have a problem with the concentration of dioxins in ash material and their treatment is always problematic. Other problems include safety, the transport of hazardous waste, and repression of developing cleaner alternatives to waste management. That is the reason why the public interest NGOs in the Slovak Republic (SR) support the development of the cleaner alternatives, for example the pilot project of modern non-combustion PCB waste destruction which is managed by UNIDO and GEF.

The main reason for development of this Policy Brief was to develop a document that could help engage the public and its participation in the decision making process about the new planned large waste incinerator which could become a new source of POPs releases as well.

Justification of Such a Plant Construction and Its Capacity

There are doubts about the amount of hazardous waste produced in Slovakia caused by insufficiency in the system of evidence. The RISO System (Regional Information System on Waste) realised by the Slovak Agency of the Environment stated the production of 1,6 mil tons of hazardous waste in the year 2000. But the research of Danish experts (who cooperated with the Slovak Ministry of Environment) showed the mistakes of the system of evidence which caused an overvaluation of the amount of hazardous waste. Mistakes were caused, for example, by multiple reporting of the same waste in different phases of waste treatment and incorrect reports from the waste producer. The Danish experts estimated the production of approximately 600 000-700 000 t of hazardous waste in SR (~ 38% of the Slovak estimate).

According to the facts of the Ministry of Environment, 30% of hazardous waste is landfilled. In 2000, 89 159 t of hazardous waste was incinerated. Mostly it was waste from chemical processes. That amount represents 5-6% from the total amount of hazardous waste (according to Ministry of Environment), or 12-15% according to the facts of the Danish experts. However the hierarchy of waste management declared by the EU and SR puts prevention of waste generation as the first priority and waste recovery thereafter. Landfilling and incinerating are at the end and they should be used only in the case that there is no available cleaner alternative.

According to the Ministry of Environment of SR there are 32 waste incinerators and 4 waste co-incineration facilities at this time in the SR. Fifteen of them are incinerators of industrial hazardous waste, 2 are municipal waste incinerators and 15 are hospital waste incinerators. Due to the obligation to fulfill the part of the EU legislation on air emission limits 7 incinerators and 1 facility for waste co-incineration ended their operating by reason of failure to comply with the emission limits. By the end of 2006 the incinerators will have to meet all requirements of the EU legislation on air protection, including the emission limit for dioxins which will lead to the closing down of more waste incinerators. In 2004, only 5 incinerators for hazardous waste and 1 incinerator for municipal waste met the emission limits.

NISAK wants to gain a support of EU cohesion funds for its investment plan and in order to do that it is attempting to prove the need of Slovakia for the capacity of the planned hazardous waste incinerator in submitted reports and documents by stating that Slovakia needs to be self-sufficient in its waste management. In two documents which were publicly available authors give the amount of hazardous waste that is going to be incinerated. Both submitted documents and the whole plan suffers from many deficiencies. Despite the attempt of evoking a feeling of objective evaluation, it conceals lot of information necessary for an objective assessment of the planned project. [1, 2]

Naming the facility as a „ Recovery and Destruction Centre for Hazardous Waste “ is in terms of European regulations misleading. A waste incinerator is a plant for waste destruction, although it uses some energy released by incinerating the waste. No other facilities matching the term *„recovery of the waste“* are involved in the project description. For example, a recycling line, etc. should be involved there.

As it was mentioned before, many of the submitted documents calculate the amount of hazardous waste that is going to be produced in the future and according to the authors, processed in the planned hazardous waste incinerator. The results lead them to the conclusion that in the future it is justified to have the capacity doubled.

The submitted analysis has two basic deficiencies:

1) The proposed plan ignores the existence of any other facility for hazardous waste recovery and destruction in Slovakia, except of the kiln factories incinerating waste, and small and inappropriate incinerators and hazardous waste landfills; and

2) The plan proposes to incinerate items that seem to be nonsense and in some cases also inefficient (in economical terms or in terms of waste decontamination).

Consequently, these two deficiencies could lead to economic bankruptcy of the entire project that will be paid by the guarantors or the state in this case. A similar matter happened to the incinerators in the Czech Republic. For example, in Plzeň, the Magistrate had to pay for an increasing debt of a hazardous waste incinerator. In the case of the municipal waste incinerator in Liberec, the Czech government had to pay for wrong economic accounting and the modern incinerator in Ostrava is also not considered as economically the most advantageous project.

The situation in neighbouring countries, including the Czech Republic, is described in the Amendment of the collection study.[3] However, for planning a hazardous waste incinerator with the capacity of 30 000 tons/year; important information about fulfilling the capacity of the waste incinerators in neighbouring countries is missing, with exemption of Austria.
In the Czech Republic, no hazardous waste incinerator of the same capacity or exceeding 30,000 tons per year is running, but even in spite of that, all of them suffer from insufficient supply. Just have a look at the modern SPOVO incinerator in Ostrava with a capacity of 10,500 tons/year which at most fills to 70% capacity.[4] In the long-term, a similar problem is affecting an even smaller hazardous waste incinerator in Lysá nad Labem in central Czech Republic with a capacity of 3,500 tons yearly. This capacity has been fulfilled just once, (in 2003) and it was just due to incinerating of about 700 tons of contaminated soils, which of course for the incinerator meant increased production of residual waste and because of that an increased cost of its running. But in the long-term not more than 1/3 of its capacity has been filled.

The lack of waste for incinerating worries the incinerator operators in all of Western Europe. That is why the direction of hazardous waste flow has been changed. Hazardous waste is imported for incinerating from developing and economically not-so-well-developed countries, i.e., to Rotterdam in Netherlands or to incineration plants in Denmark, Germany or in Great Britain. The authors of the collection study show this in the case of Austria.[5]

If we look at the amount of waste that will end up in the incinerator, we will find in it items like e.g. contaminated soils and stones or gravel from railway covers. Just a brief thought leads to the conclusion that after incinerating these items there is no reduction of their volume or weight. Furthermore, there is a question whether incinerating such waste efficiently decontaminates it.

There are many alternatives to incinerating contaminated soils; not counting dumping. Physical, chemical and biological methods of cleaning soils are increasing. Especially in the case of cleaning the walling and soils contaminated by dioxins in Spolana Neratovice, one of the non-incinerating technologies (BCD) has been chosen. Yet a more appropriate method is Gas Phase Chemical Reduction (GPCR), technology that may be used in removing an old ecological burden of PCBs in Chemko Strážske, a former production area. In the view of the Stockholm Convention, priority use of these alternative methods is highly desirable of course within conditions when there is no further rise in number of persistent organic pollutants

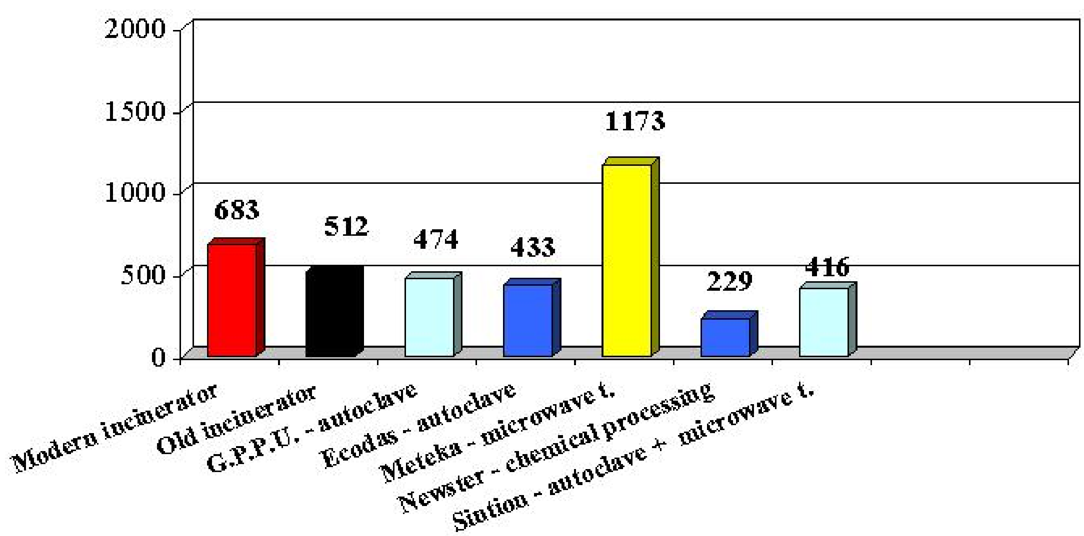
(POPs). The Convention states in Annex C that, "…priority consideration should be given to alternative processes, techniques or practices that have similar usefulness but which avoid the formation and release of such chemicals."

One of the chapters of „Initial National POPs Inventory in CR" created by a team of experts[6] describes PCBs bioremediation from contaminated soils. It is the method that could be applied in combination with mentioned non-incinerating technologies for destruction of POPs-contaminated soils.

If we go through each item from the waste catalogue that are going to be incinerate according to the authors of the study on the proposed incinerator in DUSLO Šaľa, we will certainly find alternative and an often cheaper way of handling of each of them. In more details we show, for example, sanitary waste.

If the percentage of separated waste collection in hospitals increases, the amount of waste classified as hazardous for its infectiousness decreases. This is because normal municipal waste is no longer mixed in with infectious waste. Only bandages, used infusion sets, injections and other similar sanitary materials and tools are infectious. But the paper waste, plastic packaging from the beverage and food leftovers and the whole range of household-like waste are not infectious. It is estimated that infectious waste creates maximally 17 % of the entire waste from hospitals.

Picture1. Investment costs recalculated for maximum capacity [€ net/tonne]. Source: OTZO/WPA.[7]



For processing of infectious waste after separation of the non-infectious part (which could be recycled as in the case of municipal waste), a much smaller capacity of a facility disinfecting sanitary waste and decreasing its volume is enough. Such waste would end up at the landfills as in the case of incinerating; but it would not contain toxic chemicals created by incineration.

Just for illustration: Autoclaves imported by the Ecodas Company and operated in France, Poland and Hungary, are one of the facilities suitable for processing medical waste. One technological part of this facility of capacity 300 tons yearly cost in Poland 130,000 Euros (=

ca 4.25 millions CZK). In contrast, the Czech Ministry of Health suggested releasing 50 millions CZK from the state budget equip selected incinerators in the central Czech Republic with filters and other changes needed to fulfill the standards of the European Union. The graph in Picture 1 shows investment costs in Euros per one ton of the disposed waste (installed output) for medical waste handling in different facilities. With an exception of microwave technology of the Meteka Company, the incinerators are the most expensive facilities. Operational costs of incinerators are 3-4xs higher in comparison with the autoclaves.

Problem: Waste Generated by an Incinerator

The assessment study of impacts on the environment[8] for the planned incinerator absolutely marginalizes concerns about the handling of waste produced by it. The waste which remains after incinerating hazardous waste is calculated on p. 47 and shown below. During 6,000 hours of a one-year run it will be:

Ash: 780 t
Energy gypsum: 1,020 t
Hydroxide sludge: 60 t
Solid residues (slag): 1,800 t
Calcium (II) chloride: 900 t (it remains in waste water)
Contaminated active carbon: 99.6 - 120 t
Waste water: 12,600 - 24,000 m^3 (= 12,600 - 24,000 t)

In total, under full capacity, the incinerator produces 3,780 tons of solid waste yearly.

The amount of slag estimated by the authors is underestimated according to the experiences from the hazardous waste incinerators in the Czech Republic. „Request for issuing the integrated permission for industrial waste incinerator - SPOVO, Ltd." in Ostrava contains following values: from 4,827 tons of the waste incinerated in year 2001 - 532 tons of slag remained; from 7,064 tons of waste incinerated in 2002 - 816 tons of slag was created. Therefore, about 440 kg/h (for an estimated output of 4 tons of waste incinerated per an hour) should be considered as more realistic number. It means that 2,640 t of slag would likely be created yearly at the proposed facility instead of the estimated 1,800 t. This increases the entire waste production by the proposed incinerator to 4,620 t. The residual waste produced by the incinerator weight 15% compared to waste that entered the incinerator.

We can assume that one of the biggest problems from the presented list of wastes will be the waste and waste water from cleaning of combustion products. This waste water will contain heavy metals and highly dangerous persistent organic pollutants (dioxins, PCBs, hexachlorobenzene, polychlorinated naphthalenes - PCNs and the others). These most problematic wastes would be up to 2/5 of the waste residues that will be produced by the incinerator (= about 2,000 t yearly). This issue is missing in the assessment study of impacts on the environment. We get some information about handling that waste from the note on the page 132 that says that the ash will be discarded to the settling pit at RSTO (= Directed landfill for solid waste).

However, decision of SIŽP (Slovak Inspection of the Environment) from 27.1.2005 involves a serious critique of RSTO landfill safety: "Permitting organ has permitted an activity of landfill just to 31.12. 2008 because of not fulfilling the requirements on landfill sealing and draining and collection of seepage liquids in order to §26 and §27 of the Ordinance: - bed of the landfill is not created by geological barrier of required width and permeability, - the bed of the landfill is not supplemented by artificial geological barrier of required width and permeability - the bed of the landfill is not supplemented by folia layer from high density polyethylene (HDPE) not even by the safety layer - insufficient drainage system."[9]

As the studies show, we can expect high POPs concentrations in ash from the proposed incinerator flowing out of the landfill into underground water. [10] In addition, there is a threat of carrying away the dusty particles containing these chemicals. Both of these ways of leaking toxic chemicals mean a serious threat to the environment through contamination by the dioxin-like chemicals that are not taken into account by the assessment study of the impacts on the environment. This also is inconsistent with the Stockholm Convention since piling up POPs-containing ash at the RSTO landfill will create a new ecological burden requiring decontamination of the POPs in the future.

Japanese incinerators are, for example, equipped for catalytic destruction of chemicals in residues from cleaning the combustion products of dioxins.[11] The technology GPCR (= Gas Phase Chemical Reduction), which may be used for decontamination of PCBs in Chemko Strážske, can be used for a similar goal. However, it would make no sense to incinerate, e.g., waste with halogenated chemicals content, then create contaminated ash, and then decontaminate it by the GPCR technology, if it is possible to provide destruction of such waste directly by the GPCR technology.

Waste Incinerator and Persistent Organic Pollutants

Despite the fact that the hazardous waste incinerator will be a modern one according to the description; POPs will be created as an unintended by-product of halogenated waste incineration. The Environment Assessment Study[12] addresses the release of only dioxins (PCDD/Fs) and only their release into the air. We can expect much higher concentrations of dioxins and other POPs from combustion products cleaning (in ash, energy gypsum, active carbon and waste water). In terms of exposition on human health, it is also important to watch the releases of the PCBs and hexachlorobenzene. The Stockholm Convention, ratified by the Slovak Republic in year 2002 and valid from May 2004, requires the country to do so.

It is worth noting whether the suggested incinerator, in the way it is projected, would meet the requirements of the Japanese legislation which says that for 1 ton of incinerated waste maximally 5 ug I-TEQ dioxins can be released into the environment.[13] The incinerator could produce 150 mg I-TEQ dioxins maximally per year, including its releases in ash and other combustion by-products. Using the incinerator capacity in the national inventory of dioxins emissions calculation tables, according to the methodology of UNEP used in the Slovakian NIP[14], even in the most optimistic case 922 mg I-TEQ dioxins would be produced by the proposed Slovakian incinerator. Therefore, in Japan, the planned incinerator would have to be equipped by an additional mechanism to clean the ash of dioxins.

The Assessment study also does not take into account European Parliament and Council Ordinance No. 850/2004/EC regarding POPs which changes and completes Directive No. 79/117/EEC (published in EU Official Journal 30.4. 2004) and orders the necessity of processing the waste containing POPs in such way that it would no longer show these properties. Logically, it means that dioxins, HCB, and PCBs and other POPs need to be measure in the waste and also in the waste water generated by incinerator.

The documents about the planned incinerator in Šaľa[15, 16] state that even waste containing POPs should be burned there. The Stockholm Convention binds states which have it ratified for prioritising destruction of such waste in a way that it does not lead to production of new POPs. Incineration of waste containing PCBs produces new POPs as unintended by-products. For comparison of POPs destruction technologies, a comparing of its efficiency via POPs destruction efficiency (DE = Destruction Efficiency) coefficient is used. It is easily calculated by the POPs volume obtained in original processed waste in proportion to the POPs involved within the output (in emissions to air, in waste and waste water from used technology and also in its products).[17] None of the studies available about the proposed incineration plant contain such a comparison with the other technologies. Ironically, a non-combustion destruction method will be used in Slovakia which results from an international project and co-financing by international sources.

Assessment of the Impacts on Environment and Public Health

The Environment Impact Assessment Study, made according to the requirements of the Slovak legislation by the VAPIMK Company, concerns the impacts on the environment, including the burdening of the population and surrounding villages.[18] This study has a series of deficiencies. Among the major ones are:

1) insufficient description of all facility parts;

2) loopholes in evaluation of air burdening by toxic chemicals;

3) absolute absence of an assessment of POPs burdening by waste and waste waters generated by the incineration plant;

4) comparison with the other ways of hazardous waste processing, at which would not undergo to such level of POPs releases into the environment; and

5) insufficient aim assessment of the impacts on health of the population and on quality of life in the surrounding cities and villages.

Before incinerating, hazardous waste needs to be stored. The scheme of the incinerator plant includes a sketch of a warehouse and a container for liquid waste but the impact assessment study include very little information about the ability of these spaces to prevent liquid organic chemicals releases into the environment. Neither discharge study does account for releases from these storage areas.

A further loophole in the estimate of discharges is considering dioxin emissions into air and ignoring PCBs, hexachlorobenzene, or other POPs (e.g. PCN). For the sources of dioxins releases it considers just an old and new hazardous waste incinerator. Of course, it should take into account also (at least) the dioxins releases from the chemical factory DUSLO Šaľa, from the heating station and from the ash sedimentation at RSTO.

The assessment of the burden to public health of the population surrounding the proposed POPs incinerator is misleading in the Impact Assessment. It considers just an inhalation exposure and not the exposure via the food chain. In addition, it entirely ignores potential releases of POPs in the other ways than by an incinerator stack (e.g. by the dust of the waste discarded at RSTO or by the waste water or sludge from STP). None of these pathways of exposure are taken into consideration. The calculation is made just for PCDD/Fs whereas the WHO limit is set up also for dioxins-like PCBs that will be also produced by the incinerator.

Some of the experts recommend taking into account even the contribution of other POPs (hexachlorobenzene and polyaromatic hydrocarbons) into the whole toxic equivalent. PCBs releases can occur even by the consequence of storing or releasing of waste with PCBs content (involving transformer oils, but also the paints, etc.). In a similar way, some of the destroyed hazardous waste (e.g. conservation agents from the wood maintenance, contaminated wood itself, etc.) can be contaminated by dioxins.

The study does not account for a decrease in interest in agricultural products from this area and with a fall in price of the estates and interest in recreation in the surroundings. Even if it is an area already burdened by the industry; an aim of incinerating the waste containing POPs increases the level of operational hazards in comparison with the current situation and particularly with respect to the ecological vulnerability of the area. A chance of accidents during the transportation of waste with high PCBs or hexachlorobenzene concentration is an additional potential harm to the surrounding community.

Comments to the Environment Impact Assessment Document on facility „Regional Recovery and Destruction Centre for Hazardous Waste - the Western Slovakia Region“

We agree with the authors of the EIA that the plant is situated in vulnerable area. Likewise we appreciate the relatively objective evaluation of the vulnerability of this area. However, the conclusion recommending construction of an incinerator construction as the ideal solution is a complete contradiction in environmental terms.

The Impact Assessment fails to consider any other waste management strategy than incineration. Especially misleading is Chapter II.6 „*Assessment of an Expected Regional Development If the Planned Activity Would Not Be Realised*“. This Chapter only compares alternatives to the proposed incinerators such as „*big number of small incinerators*“ or „*incinerating the waste in cement kilns*“. The authors overlook that fact that it is not necessary to incinerate the hazardous waste. If the authors of the study do not know any other alternatives, they should not be engaged in waste management. They absolutely do not include any non-combustion alternative technologies (including ones that could be used to clean up Chemko Strážske) that can be better used in safer destruction of the whole range of waste they suggest should be incinerated. Most of the waste mentioned in Table 12 can be processed in other ways: some of the waste oils can be cleaned and reused; medical waste can be decontaminated and its volume can be diminished efficiently comparable with that of an incinerator, e.g. by autoclaves. The most absurd proposal is incineration of contaminated soils or gravel. A wide range of alternatives can be used according to the type of contamination.

Further More Comments on Environment Impact Assessment

- A more detailed description of the waste storage safety is missing. It is not clear where and how, for example, medical waste - storage of which requires special conditions, will be stored. Similar is the case of contaminated soils. It is not clear that they will be stored safety against emergencies and also with ventilation in order deal with the volatile organic compounds vapours.
- Missing is a more detailed description of slag deposition and deposition of remains from combustion products cleaning.

- With regard to the fact that there is no specific technology or its versions published, it is hard to consider whether it will be possible to meet declared limits and if yes, what the demands for combustion products cleaning and the other incinerator parameters will be. The references to using of the described technology are missing and the results from measurements of toxics emissions into the air, waste and waste water produced by the incinerator are missing, too.

- Waste monitoring does not take into account the European Parliament and Council Directive No. 850/2004/EC concerning POPs, modifying and completing Directive No. 79/117/EEC (published in EU Official Journal 30.4. 2004) establishing duty to process waste containing POPs in a way that it will no longer show these properties. Logically, this means that measurements of POPs content are needed (particularly of PCDD/Fs, hexachlorobenzene and PCBs) in the waste and also in the waste water generated by incinerator.

- The plans for monitoring of working space and impacts of the incinerator to the surrounding environment are missing.

- The estimate of 30 thousand people that could possibly be affected in the case of emergency is significant. With regard to the information in the chapter II.1.3 of VAPIMK report[19] it is impossible to agree with positive assessment of the impact on the area because of possible endangering of water sources. The proposed incinerator is situated closed to a sensitive water basin area and a possible transportation accident involving POPs-containing wastes make it more problematic.

- It is question, whether the soils, stones and gravel that are planned to be burned are good waste categories for combustion in volume exceeding 9 thousands tons per year?

- The permission issued for the discharge of waste water from the Duslo Šaľa ought to be first completed by the parameters concerning persistent organic pollutants (dioxins and furans, hexachlorobenzene and PCBs) which will be obtained in the waste water from the incinerator. We believe that the sewage treatment plant is not equipped for cleaning these pollutants off the waste water. Completing the monitoring of discharged waste water and sludge from the sewage treatment plant of Duslo Šaľa by content measurements of these pollutants is also necessary. Running of the incinerator will change the composition of the cleaning water by the crucial persistent organic pollutants.

- With regard to the incinerator construction it is needed to complete quality monitoring of underground water by the monitoring of persistent organic pollutants (at least of PCDD/Fs, PCBs and hexachlorobenzene).

- The amount of the slag given in the Table 29 of VAPIMK Report[20] is underestimated in term of experiences from hazardous waste incinerators in the Czech Republic. See the records listed in the Annex to „Request for Issuing Integrated Permission for Industrial Waste Incinerator SPOVO, Ltd." in Ostrava. From 4,827 tons of waste incinerated in 2001 - 532 tons of slag remained, from 7,064 tons of waste incinerated in year 2002 - 816 tons of slag was created. About 440 kg/h could be therefore be estimated for the planned incinerator (for assumed output of 4 tons of incinerated waste per hour).

With regard to the planned discard of the waste from incinerator at the RSTO Duslo Šaľa, Inc. landfill, it would be better to give more space for description of this landfill than to illegal dumping.

- Assessment of the public health burden on the population in the surrounding area is misleading. It considers just an inhalation exposure and not exposure via the food chain. In addition, it entirely ignores potential releases of POPs in the other ways than by an incinerator stack (e.g. by the dust of the waste discarded at RSTO or by the waste water or sludge from STP). None of these pathways of exposure is taken into consideration. The calculation is, even more, made just for PCDD/Fs whereas the WHO limit is set up also for dioxin-like PCBs that will be also produced by the incinerator. Some of the experts recommend taking into account even the contribution of other POPs (hexachlorobenzene and poly-aromatic carbohydrates) into the whole toxic equivalent. PCBs releases can occur even by the consequence of storing or releasing of waste with PCBs content (involving transformer oils, but also the paints, etc.). In a similar way, some of the destroyed hazardous waste (e.g. conservation agents from the wood maintenance, contaminated wood itself, etc.) can be contaminated by dioxins.

- The diffusion study takes into account emissions of dioxins and other chemicals just from the incinerator and it does not consider their presence in the dust from waste generated by the incinerator. Moreover, it probably comes out of the values measured in similar facilities by 3x8 hours and not measured from samples taken continuously each 14 days (see study of R. De Fré and M. Wevers, 1998).[21] The authors of the EIA report also absolutely forget about a possible impact of volatile organic chemicals from storing of liquid waste.

- It is necessary to expect even more pollution of water from combustion products cleaning beside HCl and HF and thus by (PCDD/Fs, PCBs and hexachlorobenzene) and by heavy metals.

- The impact of the waste generated by the incinerator is ignored. The way of handling this waste and its transportation may cause important environment contamination by persistent organic pollutants (POPs).

- It is not possible to agree with the statement that „impacts of the proposed activity on agricultural production during the plant-life will not be vital“. [22] Potential contamination of agricultural products by persistent organic pollutants poses a serious threat. Just the sheer fact of placing the centre into this locality will lead to decrease in interest in agricultural products from this region.

- Saying that the construction and maintenance of incinerator, named as a regional destruction centre for hazardous waste, will not have impact on recreation and tourism is against all known experiences. It is necessary to add to the impacts a fall in prices of estates in surrounding villages and cities. Localities with large waste incinerators belong to the areas where the people do not prefer to move.

- How it will be possible to evaluate an impact of the proposed incinerator on the population, biota and air quality if monitoring is not mentioned?

Annex 1: Map and Photo

Map of locality Duslo Šaľa

Photo from monitoring POPs near Duslo Šaľa (in the background Duslo Šaľa)

Annex 2: Extracts from the „Request for Issuing the Integrated Permission for Industrial Waste Incinerator SPOVO, Ltd." in Ostrava (SPOVO 2003).

Articles 10.2. - Waste Taken from Other Generators

Generator of the waste	Waste category	Name of type and catalogue number of the waste[1]	Quantity taken in t		
			2000	2001	2002
List of all generators of the waste supplied in y. 2002 is listed in Annex XIX – Annual report on the waste production and handling		Annex XIX– Annual report on the waste production and handling	2 512	4 827	7 064
Physical and chemical indicators of the taken waste[2]					
Waste hauled to incinerator is liquid, slurry and solid. Its heating capacitance ranges from 0 – 45 MJ/kg and it contains a spectrum of harmful organic and inorganic chemicals, i.e. PCB, Cl, heavy metals.					

Article 10.1. - Sources and Quantities of the Generated Waste

Source of the waste	Waste category	Name of type and catalogue number of the waste[1]	Generated quantity in t		
			2000	2001	2002
incineration – rotational furnace	N	Ash and slag containing hazardous waste – 19 01 11*	235 t	532 t	816 t
Physical and chemical indicators of the generated waste[2]					
Solid, grainy material. Composition of slag and content of each component in it depends on the incinerated waste. In slag, a higher content of heavy metals occurs. Content of water < 5%. Dangerous properties – ecotoxicity, further hazardousness, late impact.					
Source of the waste	Waste category	Name of type and catalogue number of the waste[1]	Generated quantity in t		
			2000	2001	2002
steam production - steam boiler - dust-off from combustion products cleaning - electrostatic filter	N	Ash containing harmful chemicals – 19 01 13*	21 t	79 t	79 t
Physical and chemical indicators of the generated waste[2]					
Solid, bulky material of grey to brownish colour. Composition of ash and content of each component in it depends on incinerated waste. In ash, a higher content of heavy metals occurs. Dangerous properties – ecotoxicity, further hazardousness, late impact.					
Source of the waste	Waste category	Name of type and catalogue number of the waste[1]	Generated quantity in t		
			2000	2001	2002
wastewater cleaning off combustion products cleaning - filter press	N	Filter cakes from combustion gases cleaning (heavy metals sediments) – 19 01 05*	24 t	64 t	67 t
Physical and chemical indicators of the generated waste[2]					
Sediment of organic sulphides of heavy metals on TMT base, eventually also hydroxides of these metals. Composition of them varies, depending on the metal content in input waste. Sediment is of stiff consistence and grey colour. Water content max. 50 %. Dangerous properties – ecotoxicity, further hazardousness, late impact					
Source of the waste	Waste category	Name of type and catalogue number of the waste[1]	Generated quantity in t		
			2000	2001	2002
cleaning of the waste waters from combustion products cleaning - centrifuge	N	Filter cakes from combustion gases cleaning (gypsum) – 19 01 13*	61 t	58 t	241 t
Physical and chemical indicators of generated waste[2]					
Solid, bulky material of white to grey-white colour. Content: min. 90 % $CaSO_4$. ½ H_2O, max. 5 % H_2O, max. other additives. Gypsum may contain heavy metals. Content and amount of each component of heavy metals will depend on input waste. Dangerous properties – ecotoxicity, further hazardousness, late impact.					

Source of the waste	Waste category	Name of type and catalogue number of the waste[1]	Generated quantity in t		
			2000	2001	2002
incinerator lab	N	Laboratory chemicals and their mixtures which are or contain hazardous chemicals – 16 05 06*	30 kg	50 kg	70 kg
Physical and chemical indicators of the generated waste[2]					
Solid or liquid waste containing wide range of organic and inorganic noxious agents – remains of chemicals or waste immured by these chemicals. Dangerous properties: combustibility, oxidation ability, ecotoxicity, further hazardousness, acute toxicity, late impact, acidity					
Source of the waste	Waste category	Name of type and catalogue number of the waste[1]	Generated quantity in t		
			2000	2001	2002
Part of incinerator running	N	Other motor, drive and lubricating oils – 13 02 08*	-	-	0.5
Physical and chemical indicators of the generated waste[2]					
Old motor, drive and lubricating oils from transport and manipulation means and from compressors, usually the oils of mineral origin containing esters, from which the most serious are soluble naphthalic acids and carbohydrates aliphatic, aromatic, polycyclic, oxidised and sulphurised. Also additives. They are inflammable liquids of IV. Class, conflagration point 180-225° C, density 0.88 – 0.95 kg/dm^3, ecotoxic.					

Article 10.2. - Waste Taken from Other Generators

Generator of the waste	Waste category	Name of type and catalogue number of the waste[1]	Quantity taken in t		
			2000	2001	2002
List of all generators of waste hauled in y. 2002 is listed in Annex XIX – Annual report on the waste production and handling		Annex XIX– Annual report on the waste production and handling	2 512	4 827	7 064
Physical and chemical indicators of the taken waste[2]					
Waste discarded to incinerator is liquid, slurry and solid. Its heating capacitance ranges btw. 0 – 45 MJ/kg and it contains spectrum of harmful organic and inorganic chemicals, e.g. PCB, Cl, heavy metals.					

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