

**ISWA Beacon Conference 2010:
Public Private Partnership and Hazardous Waste in Developing Countries in
SEE, Middle East and Mediterranean Region**

(Novi Sad, 8–10 December 2010)

**THE ACQUISITION OF THE IPPC PERMIT FOR THE LANDFILL OF
HAZARDOUS WASTE FROM LEAD METALLURGY**

Vanja Strle ^a

^a E-NET OKOLJE d.o.o., Linhartova 13, 1000 Ljubljana, Slovenia, vanja.loz@gmail.com

Abstract

Currently there is one landfill of hazardous waste operating in Slovenia, which also ranks among the IPPC installations marked under 5.4 in the branch of activity section, being a part of the Regulation on activities and facilities, which may cause large-scale environmental pollution [1]. With the above mentioned regulation Slovenia has thus adopted a part of the requirements defined in the European Council Directive 96/61/EC concerning integrated pollution prevention and control [2]. Part of the requirements of that Directive has also been adopted in Slovenia by the Environmental Protection Act [3], referring to installations and activities, which may cause large-scale environmental pollution (IPPC). This particular Act defines regulations and procedures regarding the acquisition of environmental protection permit or in short – the IPPC permits.

The landfill of hazardous waste is intended for disposing hazardous waste from lead metallurgy. It was made in 2000 following the environmental protection consent and the building permit and is scheduled to be operative until 2019.

The landfill was granted with the IPPC permit in the beginning of this year. The application and the associated documentation required the landfill to meet all the requirements pertaining to the relevant legislation, the largest part of the requirements being a part of the Regulation on disposing waste to landfills [4].

The sample case of disposing hazardous waste in the following text presents the required procedure in order to acquire the IPPC permit, followed by the full contents of the application submitted and the supportive documentation to acquire the IPPC permits and the IPPC permit itself.

Keywords: the landfill of hazardous waste, the procedure for the acquisition of the IPPC permit, IPPC application, IPPC permit

Introduction

The IPPC story started between 1996 and 1999 in Slovenia, when certain industrial subjects were recognized as liable to IPPC and were thus inquired about whether they would fully comply to all the requirements of the environmental legislation by 2006, when the application to acquire the IPPC permit would have to be submitted or by October 2007, when the IPPC permits would have to be acquired. Certain companies answered the question as responsible players and only after they carefully considered all the options, whereas certain other

companies answered quickly without any consideration. Eventually a list was made, which contained the names of the companies which claimed they would not be able to meet all the requirements of the environmental legislation by 2007. A new deadline was afterwards negotiated for these companies to meet the requirements of the environmental legislation, which was defined with the ratified and publicly announced international treaty. This, however, did not mean that the issuing of IPPC permits for these companies could be moved to a later date than the deadline set, which was 31st October, 2007. It meant that these companies' IPPC permits – for the areas exceeding limitation values – would include the deadline of meeting the legislation requirements. The deadline would be moved to a negotiated date, which was set for each of these companies respectively.

For all the other companies, recognized as already present and existent IPPC installations, it was obligatory to comply with all the requirements of the environmental legislation and to acquire the IPPC permits by 31st October, 2007.

Perhaps the reason that the planning of executing the whole project (acquiring the IPPC permits for all the Slovenian IPPC installations) did not go through so well was the fact that the number of IPPC installation operators, who said that the transitional deadline was needed, was relatively low. With time it became obvious that there was a significantly larger number of the ones liable to IPPC. In certain cases the one liable to IPPC was not able to read the reports correctly regarding the monitoring of emissions into the environment or believed that minimally exceeding the limitation values meant that everything was in order and that everything complied with the legislation. In other cases, however, the monitoring contractor did not take measurements within the appropriate parameter section or did not follow the correct legislative act to assess the values measured. There were also numerous other versions, when exceeding limitation values was not involved, but rather inappropriate steps were taken which did not comply with the legislative requirements. Such cases included flooding away of the waste communal waters into the flowing cesspool and then into the water body, the flowing of hazardous liquids without the appropriate flow pool, the use of outside lamps, the shine of which was directed above the horizontal line, etc. All of the irregularities present were the reason that the IPPC permits for many of the present IPPC installations were not granted, until appropriate steps were taken to improve the situation.

There are other reasons why the whole process did not prove to be favourable for everybody; for example, the requirement to fill in extremely detailed applications in order to acquire the IPPC permits included considerable amount of irrelevant data, causing a lot of additional work to the IPPC companies, but had no impact on the decision about issuing the IPPC permit. The fact that Slovenian legislation experienced plenty of substantive amendments in the 2005-2008 period, causing significant legislative barriers for the IPPC operators to cross, was also one of the reasons. These were the barriers and the legislative framework they were not aware of or did not expect them to be so extensive, when they announced they would be able to meet the legislative requirements in the 1996-1999 period.

All of the above mentioned reasons resulted in delays that lasted until this year regarding the issuing of the IPPC permits. The cases were considered one after the other, in the order, set by the permit awarding authority, taking into account the date of the submitted application, the extent to which the IPPC installations complied with the environmental legislation and the capacities of administrative body and its specialized subcontractors.

In case the legislator would not be able to distribute all the IPPC permits, he also included the provision into the Environmental Protection Act [3], stating that if the IPPC device operators fail to acquire the IPPC permits by 31st October 2007 because of the Ministry of the Environment and Spatial Planning, the IPPC installation operators without the acquired IPPC permit after 31st October 2007 would not be held legally responsible.

The action of considering the application to acquire the IPPC permit for the landfill of hazardous waste, being the subject of this text, started at the end of 2009. There were two reasons why this happened. The first reason had to do with insufficient human resources of the administrative body regarding waste disposal and the second regarded the mistake,

made by the contractor of the hydro-geological report. While the report was correctly written from the substantive point of view, the body of the landfill was depicted on irregular graphic surface. The administrative body therefore believed that the landfill was placed on the inappropriate geological surface. Upon realizing that there was a mistake made in making the report, the procedure nonetheless went through and was therefore positively resolved. Despite the described mistake that took place, a relatively simple landfill turned into a complicated case.

The procedure to acquire the IPPC permit

The procedure to acquire the IPPC permit is defined in the Environmental Protection Act [3]. The description in the Act refers to new IPPC installations and the IPPC installations which undergo this particular change. This altogether means increasing the impact on the environment. In the application, the IPPC operator is to prove that the installation will meet all the requirements set by the current environmental legislation. If building is required to set up a new IPPC installation or to change it, the IPPC permit must be acquired prior to building and the conditions set in the IPPC permit are regarded as project conditions. The administrative body decides about issuing the IPPC permit within six months upon receiving the full application. The public must also be included when acquiring the IPPC permit. This is made possible with a 30-day public announcement of the IPPC application and IPPC draft (this period is not included in a 6-month time limit, which the administrative body, issuing the IPPC permits, has in order to decide). Should another person have legal interest in the influential area of IPPC installation, he or she can enter the administrative procedure and obtain the position of an associated participant.

The situation, however, is different with the existent IPPC installations, among which the landfill of hazardous waste from this particular text is also included. In order to acquire the IPPC permit, measurements and other appropriate supporting documents must provide evidence that all the legislative requirements are met. In the application to acquire the IPPC permit for the existent IPPC installation no influential area needs to be presented. The requirement regarding public participation for the existent IPPC installations is provided through the publication about the issued IPPC permit.

Environmental Protection Act [3] also allows the procedures to be joined in cases, when the IPPC installation or a larger change carried out on the existent IPPC installation, requires the assessment of the effects on the environment. In such cases the designation of an influential area is obligatory, whereas the environmental protection consent and the IPPC permit are issued by means of joint decision.

The application to acquire the IPPC permit

The Ministry of Environment and Spatial Planning in Slovenia prepared two types of applications to acquire the IPPC permit. One type was intended for waste landfills and the second for all the other installations.

The required application contents to acquire the IPPC permits for the landfill are summarized by the Regulation on disposing waste to landfills [4], adding the 1999/31/EC Council Directive on the landfill of waste [5] to the Slovenian legal order. Besides basic information regarding the landfill, as for example the size of the landfill, the description of types and quantity of waste to be disposed, the whole disposing capacity, the description of the place for disposing waste along with its hydro-geological and geological characteristics, the application must include other information as well. It must contain suggested measures to prevent and reduce environmental pollution, the proposal of monitoring performance and controlling the landfill operations, the proposal of the plan of how to handle waste on the landfill, the proposal of the plan of closing down the landfill and the measures to prevent harmful environmental effects after the landfill has been closed, the programme of the operation monitoring in regard to the pollution of underground waters, the obligatory part of

which is also the programme of measures if the warning change parameters of underground waters are exceeded. The form of financial security must also be submitted in regard to carrying out the measures for environmental protection during the operation of the landfill, its closing process after it ceases to operate and after it finally closes.

Within the application requirements, the landfill operator must also meet other requirements set by the Regulation on disposing waste to landfills [4]: the landfill must be placed on the ground with sufficiently low water permeability or must comply with the requirements regarding the water permeability, the underground area of the landfill must be stable in the long run and prevents potential deformation of the landfill's bottom and furthermore provide the regulation of the underground sealing and draining layers for unimpeded collecting and draining of the landfill leachate. Moreover, the filled landfill parts of non-hazardous and hazardous waste must be covered and provided with surface sealing in order for the landfill gas to be captured – if it is produced by the deposited waste; the structure and thickness of covering layers must also comply with the provisions regarding individual types of landfills, the landfill must be equipped according to the rules so that waste inspection and checking can be performed before it is deposited. The making of waste assessment and other descriptions must also be included.

In its Regulation on disposing waste to landfills [4], Slovenia allows the landfills for inert, non-hazardous and hazardous waste. The public is extremely reluctant to accepting the hazardous waste landfills; similarly, the administrative body of the Ministry, awarding the environmentally protective permits for the landfills, shares the same negative viewpoint. This is particularly obvious, if the landfill is simultaneously also an IPPC installation. These were precisely the reasons why the case with our landfill faced so many complications. The investigating of the landfill's suitability included such details and was so extensive that it was logical to assume that complications were underway. It is however true, as mentioned before, that a mistake was made in the making of the hydro-geological report: the body of the landfill was placed on the wrong graphic groundwork by mistake, resulting in the consequential trouble. On the basis of irregular report the hydro-geological maker's statement had to be submitted to the administrative body, specifically stating that a mistake occurred. A new geodetic record had to be made and the ground structure on the narrower landfill area had to be checked. The tracing experiment to optimize monitoring points of underground water was also required. A more accurate mapping of the area in order to define the injection point for the tracing experiment showed what was already presented in the project to acquire the building permit – that the lower partition of the landfill was actually placed on crest lime because of stability, whereas the body of the landfill is placed on impermeable claystone. The partition was placed on the crest lime due to stability, because the foundation process in claystone can prove to be a problem. Due to the fact that the landfill of hazardous waste was involved, all the defined and confirmed results did not suffice for the administrative procedure to be solved properly. The waste, deposited on the landfill of hazardous waste from lead metallurgy, described in this text, has no dangerous leachate and cannot be inhaled, consumed and cannot penetrate the skin and thus cause poisoning, but these facts played no role in the administrative procedure to acquire the IPPC permit.

Hazardous waste characteristics in Slovenian legislation are defined on the provisions set by the Regulation on waste management [6], summarizing also the provisions of the 91/689/EGS Directive regarding hazardous waste [7]. The waste deposited on the considered landfill was marked hazardous by the authorized contractor assessing the waste. The mark H6, defining hazardous characteristic and H10, defining it is poisonous for reproduction in both cases signifies that the waste contains lead in the amount exceeding 0,5% (H10) and 3% (H6). The waste is deposited in the form of metallurgical slag and is previously processed by settling, stirring and water showering in a storage facility for a few months. The landfill is constantly covered with a weighted foil, removed only when the waste is brought to be deposited. Depositing waste must always be done in dry weather in order to prevent the occurrence of the landfill leachate. After the waste has been deposited, the

landfill is again covered with a sealing foil, which is weighted and sealed in such a way that the rainfall does not enter the body of the landfill. The rainfall, falling on the sealing foil and on its very edge, runs into a collecting pool and is drained through a pipeline into the factory of the metallurgy of lead, where it is afterwards used in order to prepare the slag prior to being deposited.

There are relatively only minor differences between the landfill of hazardous waste and the landfill of non-hazardous waste in the Regulation on disposing waste to landfills [4]. Basic qualitative differences regard mainly the requirements to protect the ground and average water permeability. They also regard the requirements that have to be met when waste is deposited considering the parameter values of leachates and pollution, whereas in the area of structure of individual layers intended for covering the surfaces of the landfill's body already filled, the differences appear only within the same selection of requirements for one type of the landfill or the other. Let us take a look into the quantity of lead, which can be present in different types of waste. It can be determined that the limitation value of leachate is 50 mg per kg of the dry matter when depositing hazardous waste on the landfill for hazardous waste. But when depositing stabilized and non-reactive hazardous waste on the landfills of non-hazardous waste – without the biologically degradable components or when depositing non-hazardous waste containing a large amount of biologically degradable materials, produced as the remaining parts of the process after the R3 procedure, the amount of dry matter is 10 mg per kg. For inert waste, deposited to the landfill of the inert waste, the limitation value of leachate is 0,5 mg per kg of dry matter. In short, the difference between the landfill for hazardous waste and the landfill for non-hazardous waste the quantity of lead in leachate is five times as large, whereas the difference between the landfill for hazardous waste and the landfill for inert waste, the quantity of lead in leachate is hundred times as large.

The analysis of the leachate of our waste showed that the lead concentration in the leachate is under 10 mg per kg of dry matter and neither of the other parameters exceeded limitation values for non-hazardous waste. Despite many facts, a demand has been made to close down the part of the landfill. The facts are as follows: the landfill is placed on an appropriately homogenous and poorly permeable geological ground; the landfill's bottom is appropriately sealed, and is from both longitudinal sides surrounded with peripheral reinforced concrete wall, having the function of protection and draining of back-waters; it has the system for capturing landfill leachate, although the latter does not actually appear, as was previously explained. It is made in such a way that it practically cannot pollute the underground water, which was also determined by monitoring of underground waters. Despite all these facts, the administrative body demanded the part of the landfill be closed in the area, leaning on the part of the transversal partition that was founded on the crest lime. On the basis of this demand a project of closing the part of the landfill was launched, which fully complied with the project to acquire the building permit according to which the building permit for the landfill was acquired. Several meters of the landfill area were closed down.

The last phase in administrative procedure to acquire the IPPC permit was to ensure the financial security for the period after closure. The calculation in the amount of the financial security was made, considering the 30 year period as a regular period to perform measures after the closure of the landfill, the setting of the amount and type of the financial security and the setting of terms and conditions to capitalize the financial security. The Regulation on disposing waste to landfills [4] assumes various options for financial security, as for example a bank guarantee, insurance policy or a deposit on a special bank account, practicing the process that financial security can be ensured only with a bank guarantee. The problem that occurred, regarding the financial security is that the provisions of the Regulation on disposing waste to landfills [4], setting the amount of the financial security, are poorly defined and do not allow for any intelligent manoeuvring in different situations. In case of our landfill this was clear on more segments – one of those was, for example, a time interval that the Regulation on disposing waste to landfills [4] defines for closing the landfills. The time interval is set

equally for all the landfills, which means that in every case and regardless of the landfill type, the closing of the landfill is scheduled for three years. For certain landfills, particularly for the industrial landfills, accepting only the waste from its own production, this time interval is too long, meaning that the closing of the landfill can be done sooner than in three years. In order to cover the investment costs of closing the landfill, the landfill operator must for a longer period of time ensure the largest sum of the financial security than necessary. More time and money than the state would actually need to execute the closing of the landfill are therefore also provided, in case the landfill operator goes bankrupt. As scheduled by the project, the closing time to acquire the building permit for hazardous waste from lead metallurgy is one half of the year. Despite this fact, the landfill operator had to acquire a bank guarantee, which included a three-year closing period.

The IPPC permit

The landfill of hazardous waste, described in this text, belongs to the simpler cases, which is also obvious from the acquired IPPC permit. Because no biologically degradable waste is deposited onto it, no greenhouse gases are produced and therefore the landfill does not have gas-pipe network to capture and carry the gas and also has no obligations regarding the emission measurements and producing the assessment of the annual quantity of the greenhouse gases emitted in the air. There are also no other sources of emissions on the landfill location, as for example stationary engines with internal combustion or other sources, so the IPPC permit does not require any monitoring of the emissions. The only requirement regarding air protection is taking actions to prevent dusting by the factory and working vehicles and potential dusting caused by waste.

Drainage waters are collected on the landfill and they run into the collecting pool over the sealing foil above the deposited waste. Further on, they run down the pipeline to the location of the waste production, where water is used to stabilize it. Due to the described manner of using the whole quantity of the collected water, no monitoring of water is required and hence is not the subject of the IPPC permit. In regard to these waters on the base of the landfill operator statement, the IPPC requires him to ensure the entire amount of such waters for the purpose described above.

There are no sources of electromagnetic radiation on the landfill location. Because of this, no monitoring of the electromagnetic radiation is included in the IPPC permit.

Noise emission measurements were made for the landfill area, which showed that the noise level - because of the landfill's operating on every selected place assessed for noise measurement - were lower by 6 dBA or more than 6 dBA from all the limitation noise levels. The landfill operator was thus allowed to discontinue the monitoring of the operating noise. Despite the given extenuating circumstance, the noise segment in IPPC permit is nonetheless considered, meaning that the landfill operator is required to assess the first noise emission in case a larger change occurs in the landfill's operation.

The operating landfill does not produce waste, so the IPPC permit has no requirements regarding the handling of waste produced.

The larger part of the IPPC permit thus mainly deals with the quality of the waste deposited, the leachate limitation values with the parameters of the pollution level of waste, the monitoring of underground waters, meteorological parameter measurements and other conditions required for the landfill to operate. These conditions include appropriate qualifications provided for the staff dealing with the landfill and the way how the waste is deposited into the body of the landfill. Furthermore they include ensuring and checking the stability of the body of the landfill, the making of regulations, the plan of handling the waste, recording and keeping an operation diary, the necessary landfill equipment, the measurements in order to close the landfill, financial security and the conditions to capitalize it, the requirements about informing the administrative body about all the changes regarding the landfill and other requirements as well.

Conclusion

Depositing the smallest quantity of waste possible and the waste that is as inert as possible, increasing the processing range and recycling of waste along with closing the recycling process currents are definitely the key objectives in the area of protecting the environment when handling waste. They directly include the operator of the landfill of hazardous waste, the subject of which describes this text. The landfill will be in operation for about nine years, and the landfill operator is already thinking about the solutions that will follow after the closure of the landfill, although they will probably start progressing earlier. One of the solutions the landfill operator is considering is processing hazardous waste, produced in his factory for melting lead. The aim of processing might be reducing hazardous qualities of waste by immobilizing dangerous metals and therefore providing the possibility to deposit such waste on other appropriate landfills. Such waste can be stabilized to an extent of acquiring the certificate for the building material for appropriate specific use. There is also an option of separating useful substances out of waste, if there would be evidence suggesting economic benefits. Waste can also be the raw material; certain waste can also be an energy product and besides reducing waste at their source, such solutions are the best starting points regarding the deliberations of what to do with it.

References

1. Regulation on activities and facilities, which may cause large-scale environmental pollution (Official Journal RS No. 97/04, 71/07 and 122/07)
2. Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control, amended by the Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003, Directive 2003/87/EC of the European Parliament and of the Council Text with EEA relevance of 13 October 2003, Regulation (EC) No 1882/2003 of the European Parliament and of the Council of 29 September 2003 and Regulation (EC) No 166/2006 of the European Parliament and of the Council of 18 January 2006, and later on published in a codified version Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control, amended by Directive 2009/31/EC of the European Parliament and of the Council Text with EEA relevance of 23 April 2009
3. Environmental Protection Act (Official Journal of RS No. 39/06-ZVO-1-UPB1, 49/06-ZMetD, 66/06-Odl. US, 33/07-ZPPlan, 57/08-ZFO-1A, 70/08 and 108/09)
4. Regulation on the landfill of waste (Official Journal of RS No. 32/06, 98/07, 62/08, 53/09)
5. Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, amended by the Regulation (EC) No. 1882/2003 of the European Parliament and of the Council of 29 September 2003 and Regulation (EC) No. 1137/2008 of the European Parliament and of the Council of 22 October 2008
6. Regulation on waste management (Official Journal of RS No. 34/08)
7. Council Directive of 12 December 1991 on hazardous waste (91/689/EEC), amended by Council Directive 94/31/EC of 27 June 1994, Regulation (EC) No 166/2006 of the European Parliament and of the Council of 18 January 2006 and Directive 2008/98/EC of the European Parliament and of the Council Text with EEA relevance of 19 November 2008 and corrected by Corrigendum, OJ L 023, 30.1.1998, p. 39 (91/689)