

European Investment Bank
100, Boulevard Konrad Adenauer
L-2950 Luxembourg

Zagreb, 23rd of March 2010.

Subject: Dina VCM-PVC Plant Construction EIA comments:

The DINA complex is situated relatively close to the surrounding settlements: i.e. Omišalj and Njivice are situated about one km and two km respectively from the complex boundaries. However, although air quality testing is foreseen, it is not mentioned what the likely impacts will be on these settlements, except regarding noise which is deemed to be minimal.

The cumulative impacts of current projects have not been examined – especially important considering it has already been decided that another big project, an LNG terminal, is to be built in the same location.

The DINA complex has been built right on the sea coast and the impacts on marine life of the existing and future facilities have not been examined in the study.

Citizens will not accept new projects in this area as the facility is to be built next to the Gulf of Kvarner in the Adriatic, threatening to pollute the sea. This site is covered by the Barcelona Convention and such a project is not in line with the Convention - see Annex 1. A successful campaign has already managed to stop the oil pipeline project Družba Adria that was designed to end at the Omišalj port.

PVC production should be phased out – not increased

The capacity of the planned plant is 120,000 tonnes of PVC a year, which is equal to 10% of the total waste produced in Croatia. An increased percentage of PVC material in Croatian waste could lead to serious air and soil contamination as it is planned that mechanical – biological plants will start to produce refuse-derived fuel for burning in cement kilns.

In the study it is not mentioned how the PVC manufactured at the factory will be disposed of or what its health impacts will be if burnt. PVC, a common constituent in municipal waste, has also been identified as a dioxin precursor.¹ There is no safe disposal technique for PVC material, and even the waste disposal industry fears the

¹ Thornton J. Pandora's Poison: Chlorine, Health, and a New Environmental Strategy ,

impact of PVC in burning matter.² Some of the conditions of safe incineration are moisture content, composition of materials, calorific value and **PVC contamination**.

It is almost unbelievable that dioxins are not even mentioned in this study.

The study published on the EIB webpage has failed to address one of the most important environmental and human health risks regarding PVC: the formation of dioxins during the manufacturing process, which is unavoidable according to industry sources.³ Dioxins have been found in the major PVC precursor, ethylene dichloride (EDC)⁴ and are found in EDC/vinyl chloride monomer (VCM) production wastes at very high levels.⁵ Dioxins have also been detected in some samples of PVC at low levels.⁶ Moreover, one of the congeners of dioxin has been identified as a “marker” for those who work in EDC/VCM production.⁷ Making the very conservative assumption that all EDC/VCM facilities in the world are designed, equipped and operated like those in Germany (including German-standard high temperature incinerators for waste treatment), dioxin releases from global production of PVC range from 3 to 30 grams TEQ per year released to air; 3 to 993 grams TEQ per year released to water; and 12,040 grams TEQ per year released in catalyst residues.

Some of the diverse organochlorine by-products created in the synthesis of EDC/VCM end up in the PVC itself. In May 1994, the Swedish Environmental Protection Agency found that pure PVC plastic from two Swedish producers contained dioxins, furans, and PCBs at concentrations ranging from 0.86 to 8.69 ppt TEQ.⁸ In 1995, the UK government found dioxins and furans in the same range in PVC food packaging items, including cling film and bottles for oils and beverages.⁹ Subsequently, the U.S. Vinyl Institute and the European plastics industries conducted their own studies, both of which identified trace quantities of some dioxin congeners in some samples of PVC plastic.¹⁰ The levels were very low, but any quantity of dioxin in consumer products is a matter of concern.

Inadequate attention is given in the study to what will be done with the biological wastewater sludge. It is not clear if it will be classed as hazardous or non-hazardous waste, and more information needs to be given about its disposal in either case. The

² Ernie Beker, “**Processing High-Quality Derived Fuels**” RTT Systemtechnik GmbH, Zittau

³ ICI Chemicals & Polymers Ltd, 1994. Report to the Chief Inspector HMIP Authorisation AK6039, ICI Chemicals & Polymers Ltd., Safety & Environment Department, The Heath, Runcorn, April 27, 1994.

⁴ Bretthauer E., Kraus H., de Dominico A., (eds.), *Dioxin Perspectives: A Pilot Study on International Information Exchange on Dioxins and related compounds*. Plenum Press, New York, 1991.

⁵ Costner, P. 1995. *PVC: A Primary Contributor to the U.S. Dioxin Burden*. Washington, D.C. Greenpeace.

⁶ Swedish Environmental Protection Agency, 1993. *Swedish Dioxin Survey*, an open database (11 Dec. 1993), and Ministry of Agriculture, Fisheries and Food, Food Safety Directorate (UK), 1995. *Dioxins in PVC food packaging*. Food Surveillance Information Sheet 59, London.

⁷ Hansson, M., Barregard, L., Sallsten, G., Svensson, B.-G., Rappe, C. 1997. Polychlorinated dibenzo-p-dioxin and dibenzofuran levels and patterns in polyvinylchloride and chloralkali industry workers. *Int. Arch. Occup. Environ. Health* 70:51-56.

⁸ Thornton J. *Pandora's Poison: Chlorine, Health, and a New Environmental Strategy* ,

⁹ Thornton J. *Pandora's Poison: Chlorine, Health, and a New Environmental Strategy* ,

¹⁰ Wagenaar et al. 1996; Carroll et al. 1996.

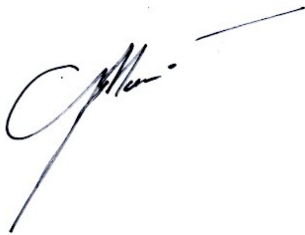
study states that it will be left to a licensed company, however this is completely inadequate, as there are no facilities in Croatia for the disposal of such waste if it is classed as hazardous. As the facility would be on an island, even the disposal of non-hazardous waste presents issues that must be fully explained here.

The decommissioning plan is totally inadequate. In effect the study merely states that the company will think about it when the time comes, which is absolutely unacceptable.

Conclusion:

Because of the abovementioned risks and international obligations we recommend the EIB not to finance the Dina PVC plant.

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A handwritten signature in black ink, appearing to read 'Marijan Galović', with a long horizontal line extending to the right.

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ANNEX 1.

BARCELONA CONVENTION

In 1993, the Contracting Parties to the Barcelona Convention on the Mediterranean Sea, in a recommendation adopted on the ‘Implementation of the Land Based Sources Protocol and Dumping Protocol,’ agreed:

‘...to recommend that the Contracting Parties reduce and phase out by the year 2005 inputs to the marine environment of toxic, persistent and bioaccumulative substances listed in the LBS [Land Based Sources] Protocol, in particular organohalogen compounds having those characteristics. In this framework, high priority is to be given to both diffuse sources and industrial sectors which are sources of organohalogen¹¹ inputs.’

Related to that, it is worth mentioning that The Contracting Parties to the Barcelona Convention agreed¹²:

‘...to promote measures to reduce inputs into the marine environment and to facilitate the progressive elimination by the year 2005 of substances having proven carcinogenic, teratogenic and/or mutagenic properties in or through the marine environment.’

¹¹ any of a class of organic compounds that contain at least one halogen (fluorine [F], chlorine [Cl], bromine [Br], or iodine [I]) bonded to carbon. They are subdivided into alkyl, vinylic, aryl, and acyl halides. In alkyl halides all four bonds to the carbon that bears the halogen are single bonds; in vinylic halides the carbon that bears the halogen is doubly bonded to another carbon; in aryl halides the halogen-bearing carbon is part of an aromatic ring; and in acyl halides (also called acid halides) the halogen-bearing carbon is doubly bonded to oxygen.

¹² The Contracting parties to the Barcelona Convention are Albania, Algeria, Bosnia Hercegovina, **Croatia**, Cyprus, Egypt, the European Union, France, Israel, Italy, Lebanon, Malta, Monaco, Morocco, Portugal, Spain, Slovenia, Syria and Tunisia.