Euro Chlor
representing the chlor-alkali industry

Brussels, May 2010

Questions and Answers on the Chlor-Alkali Sector and the EU Emission Trading System (ETS)

Introduction

The chlor-alkali industry is an electro-intensive industry which has already been impacted by the current ETS Directive due to the CO_2 cost included in the electricity price. The ability of manufacturers and downstream consumers to pass on these costs is extremely limited as they are active on a global competitive market where non European manufacturers do not have these costs. So the chlor-alkali industry particularly is exposed to significant risk of carbon leakage.

The revised EU ETS Directive (2009/29/EC) recognises the need to avoid carbon leakage whilst at the same time fulfilling the climate change objective of reducing CO_2 emissions. Article 10a6 of the Directive allows Member States to adopt financial measures to compensate electro-intensive sectors for the additional costs of carbon passed through in electricity price.

This document offers some answers to the often raised questions why the chlor-alkali industry should be considered an industry at risk of carbon leakage and what compensation is expected.

1. What is the role of electricity in the chlor-alkali production?

Electricity for chlor-alkali producers is used primarily as a raw-material not a utility and the cost accounts for about 50% of the manufacturing cash cost to produce chlorine and caustic soda. These chemicals are very important building blocks for the chemical and pharmaceutical industry. They are produced mainly through the electrolysis of brine whereby a strong electric current is passed through the water/salt solution. This electrochemical process leads to the generation of a fixed ratio of 1 tonne chlorine, 1.1 tonne caustic soda (sodium hydroxide) and 0.03 tonne hydrogen. This product combination is called an Electrochemical Unit (ECU).

So, physically and chemically, the electric current (which is a stream of electrons) is essential to the chlor-alkali reaction.

2. Is the chlor-alkali industry an energy intensive industry?

Indeed it is. The European chlor-alkali industry consumes about 35 TWh of electricity per year (1 terawatt hour = 10^{12} watt hour). Energy cost amounts to up to about 28% of turnover in the chlor-alkali industry. The average electricity consumption of a chlorine plant is about 3.3 MWh per ECU.

Euro Chlor, an Affiliate of Cefic
Avenue E. Van Nieuwenhuyse 4, Box 2 B - 1160 Brussels Belgium Tel: +32 2 676 72 11 Fax: +32 2 676 72 41 E-mail: eurochlor@cefic.be http://www.eurochlor.org

3. Is the chlor-alkali industry an important CO_2-emitter?

We must differentiate the notions “direct emitter” and “indirect emitter” of CO_2. Through its very important electricity consumption the chlor-alkali industry is clearly an indirect emitter of CO_2, i.e. emissions occur during the production of the electricity that the sector uses. Since there are no combustion processes in the chlor-alkali production, the sector is not a direct emitter of greenhouse gases. Only a limited amount of CO2 emissions are generated through the heating that is necessary in the generation of process steam.

4. What is “carbon leakage”?

Most European industries, including the chlor-alkali industry, must compete on global markets. Carbon leakage is the technical term for the inevitable shift and delocalisation of direct or indirect CO_2 emitting industries to other regions in the world with lower cost of carbon due to less stringent environmental measures. As a consequence the carbon would be emitted elsewhere. This would of course also lead to “investment leakage”.

5. Is the chlor-alkali industry exposed to carbon leakage?

The sectors exposed to carbon leakage according to the criteria set in Art. 10a 15 have been identified at NACE-4 level taking both direct and indirect costs into consideration. The chlor-alkali sector qualifies as exposed to carbon leakage at NACE-4 level (2413 basic inorganic chemicals).

In addition, the chlor-alkali industry has commissioned an independent consultant to prepare a qualitative assessment of the two criteria (cost of CO2 as a % of GVA and extra-EU trade impact) specifically for the chlor-alkali industry. The assessment shows conclusively that the chlor-alkali industry meets the exposure criteria set up by the Commission.

6. What does the chlor-alkali industry expect from the revised ETS?

The European chlor-alkali industry is clearly exposed to carbon leakage. It should therefore be eligible for financial compensation provided for in Article 10a6 in order to compensate for the cost of carbon built into the electricity price. The EU Member States should apply the guidelines for financial compensation in a harmonised EU-wide manner to ensure a level playing field. This would also be in line with the EU-wide approach for the allocation of allowances for direct emissions.

7. How should the industry be compensated?

The sector should be eligible for compensation during the whole phase III period (2013-2020) and as long as the carbon leakage risk is present. As this is very specific to indirect cost incurred, it should not impact the eligibility for other kinds of state aid measures not related to CO_2 costs.

The level of compensation should be 100% of the eligible cost based on benchmarked average electricity consumption (in the case of chlor-alkali, the benchmark is determined by the membrane technology – the most energy efficient available technology).

Euro Chlor, an Affiliate of Cefic

Avenue E. Van Nieuwenhuyse 4, Box 2 B - 1160 Brussels Belgium Tel: +32 2 676 72 11 Fax: +32 2 676 72 41 E-mail: eurochlor@cefic.be http://www.eurochlor.org

8. How could a suitable benchmarking system be organised for the chlor-alkali industry?

For the chlor-alkali industry the benchmark for electricity consumption will be determined for membrane technology, which is recognised as the most efficient available technology[1]. The weighted average of the electricity consumption per product unit of all the plants using the membrane technology in the EU should be used for setting the benchmark. According to the study commissioned by Euro Chlor and conducted in 2009 by PTAI (Phillip Townsend Associates) this is equal to 2.750 MWh/t chlorine (excluding liquefaction). However, for some process specific reasons adjustment to the benchmark might be necessary.

Glossary

ETS: Emission Trading System: the EU ETS started in 2005 and is based on Directive 2003/87/EC. It is a trading system for allowances of CO_2 emissions for some sectors of the European industry. The first trading period runs from 2005-2007, the second one from 2008-2012, and the third one will start in 2013. See more on: http://ec.europa.eu/environment/climat/emission/index_en.htm

ECU: Electro Chemical Unit: this unit corresponds to the sum of 1 tonne chlorine plus 1.1 tonne caustic soda and 0.03 tonne of hydrogen

NACE-4: European Statistical Classification of Economic Activities with 4 digits: 2413 corresponds to basic inorganic chemicals (which comprises chlor-alkali industry). See more on: http://ec.europa.eu/environment/emas/documents/legislative_en.htm

GVA: Gross Value Added: The margin between the return from market sales and the cost of production excluding manpower costs and depreciation (plus some adjustments, usually minor).

[1] Directive 2009/29/EC, Article 10a 6, impose the use of "most efficient available technologies"

Avenue E. Van Nieuwenhuyse 4, Box 2 B - 1160 Brussels Belgium Tel: +32 2 676 72 11 Fax: +32 2 676 72 41 E-mail: eurochlor@cefic.be http://www.eurochlor.org