Socio-economic analysis for Authorisation
a case of functional chrome plating

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The case of Hoogovens

- Chromium trioxide, Cr(VI) is used
- Chrome plating of rolls used to produce steel and non-ferrous metals which are used in automotive and construction industries
- A roll can be used for 8 hours (weighs several tonnes each, max 16 t)
- A unit producing steel plate can include 10 rolls
- Production in the EU is carried out at 12 sites in 5 countries

Analysis of alternatives

- A thorough analysis of alternatives has been carried out
- No technically feasible alternatives were found
- There is no expectation that there will be any available alternatives in the near future

Socio-economic analyses

For non-threshold substances (or if adequate control has not been demonstrated) the benefits of continued use need to be adequately demonstrated to exceed the risks of continued use,

i.e. the socio-economic path will be followed in the application process.

Assessment of Impacts

- The assessment of impacts includes a quantitative monetary assessment of the societal impacts associated with the non-use scenario, i.e. assuming authorisation is not granted.
- The assessment is based on impacts occurring within the EU and which are incremental to the baseline situation.
- The applicant outlines its justifications for the chosen non-use scenario by presenting two optional non-use scenarios initially considered and one which involves a move to Serbia. The applicant analyses the scenarios and provides arguments for why the chosen non-use scenario, which assumes that all CHL entities (except non-chromium related activities in three companies) closes its production, is the most likely one.
- The assessment of economic impacts undertaken by the applicant i conforms with standard procedures.

Human health impacts of continued use

- In the quantitative analysis of the costs of continued use, the applicant estimates the change in physical health impacts (disease burden) due to changes in exposure. The approach is based on linking quantitative relationships between exposure and the health impact of interest (cancer). This general procedure is widely used for the assessment of benefits related to pollutants.
- RAC's dose-response relationship was used in the applicants' assessment assuming **worker exposure** of 8 hours per working day, 5 days/week over a working life of 40 years. The dose-response relationship was also used in the applicants' assessment assuming **general population exposure** (man via environment) of 24 hours per day, 7 days/week over a lifetime of 70 years. Recalculated for 12 years.
- The quantitative health impact assessment for workers and general population estimates the number of avoided cases of lung cancer as a result of the change in exposure to Cr(VI) under the non-use scenario to be of the order of 1 for the review period requested by the applicant.

Health impacts cont.

- Concerning the estimation of economic welfare losses associated with this number of excess lung and intestinal cancer cases, the applicant assesses the human welfare losses associated with morbidity and mortality including treatment costs. The valuation of morbidity and mortality effects uses a willingness to pay (WTP) value of €5.2 million to avoid a fatal cancer case and €414,000 for a non-fatal cancer case.
- This is overall an overestimate rather than underestimate resulting in less than €3.25 million for workers at CHL entities and residents exposed as ‘man via environment’.

Calculation of economic benefits

- The applicant’s analysis of the benefits of continued use is based on a non-use scenario in which CHL entities within EEA are shut down. The calculation of the costs includes only the activities directly related to functional chrome plating.
- The calculation only includes estimates of turnover and costs of inputs thereby reaching value added of its activities. The net present value of value added using 4% discount rate is stated as €95.3 million in the application.

Calculation of economic benefits, cont.

- SEAC views profit as a more relevant estimate of economic benefits than value added. Profit after reducing value added with labour and capital costs is also presented and it was used in SEACs opinion.
- The sum of profits lost is in the range of €1-50 million (the actual value has been claimed confidential by the applicant), for the 12 year review period requested by the applicant.

Potential extra costs for transport

- The largest economic cost of the non-use scenario is, however, related to losses among steel and aluminium producers and industries using the steel and aluminium plates.
- A roll needs to be resurfaced after 8 hours and it weighs several tonnes making the distance between the plating and use of the rolls an important factor. The potential loss due to increased transport cost (to and from Serbia in the calculation) and investment needed may amount to almost €2 billion.

Non-use scenario

- If the option with relocation to Serbia is not the chosen scenario, the costs for steel and aluminium industry would be even higher including closure of downstream industrial activities. A figure of € 5.7 billion is stated.
- The applicant also mentions that the investment cycles of steel and aluminium mills are very long (30 – 40) years. According to the applicant the use of chrome plated work rolls is the only option to keep these mills running. SEAC noted that during the public consultation several of the applicant's downstream users stressed the necessity of the applicant’s products for their production.

Social costs - unemployment

- In addition to economic impacts, the applicant also assesses the expected social impacts of the non-use scenario. The primary impact considered here is the unemployment associated with redundancies resulting from the closure of the CHL entities. The number of affected workers are 108 at 11 sites.
- The applicant provided estimates of salary costs of €5.58 million per year (instead of the average cost of an unemployed person) and a total cost for those unemployed after a close down of its operations of more than €6.23 million (13.4 months of employment is assumed).

Other impacts

- The applicant also mentions wider economic impacts and distributional impacts, but since these are only considered qualitatively and not included in the quantitative comparison of benefits and costs and would not affect the conclusions of the assessment they are not considered any further here.

Summary of economic calculations

- The human health impacts associated with the applicant's use of chromium trioxide are estimated at about €3 million for the 12-year period.
- Profits are in the range of €1-50 million and losses for downstream users are at least €2 billion.
- The benefits of continued use of chromium trioxide considerably exceed the risks of continued use. SEAC considered any uncertainties to be minor such that they would not affect the overall conclusion.

Review period

A long review period (12 years) was recommended

- No alternatives (also not expected within a normal review period)
- Active search
- Estimated costs much less than benefits