

**SOCIO-ECONOMIC ANALYSIS**  
**NON-CONFIDENTIAL SUMMARY**

**Legal name of applicant(s):** Sasol-Huntsman GmbH & Co. KG

**Submitted by:** Sasol-Huntsman GmbH & Co. KG

**Substance:** *Dibutyl phthalate*

**Use title:** *Use as an absorption solvent in a closed system in the manufacture of maleic anhydride (MA)*

**Use number:** *1*



## NON-CONFIDENTIAL SUMMARY

### Introduction

The Annex XV dossier for the nomination of DBP as a Substance of Very High Concern confirms that there is a threshold to the hazardous effects of the substance. This Application for Authorisation demonstrates that the risks arising from the use of the substance in the manufacture of maleic anhydride (MA) are adequately controlled while no suitable alternative for DBP in this use is available. In addition, the socio-economic analysis provides evidence that, in the event of a refused Authorisation, there would be severe adverse socio-economic effects without achieving any significant reduction in risks to workers or consumers.

Refusal of this Application for Authorisation, in conjunction with the prevailing lack of economically viable alternatives, would mean that Sasol-Huntsman would no longer be able to use DBP in the manufacture of MA. As a consequence, the Sasol-Huntsman MA plants in Moers, Germany would no longer be able to operate. Sasol-Huntsman would have no option but to close down the MA plants and cease operations. Conversion to one of the remaining industrially practiced, but outdated technologies (which were practiced at the Moers site in the 1980s) would be overly capital-intensive, require a downtime of 2-3 years for rebuilding, and reverse the energy balance from net producing to net consuming. Furthermore, EU downstream users would be decimated by a multi-year supply disruption. This socioeconomic analysis will demonstrate that the consequences of a refused Authorisation would greatly outweigh any imagined benefit arising from the termination of this use of DBP.

### Socio-economic benefits of continued use of DBP in the manufacture of MA

An Authorisation permitting the continued use of DBP in the manufacture of MA would enable Sasol-Huntsman to continue supplying the European MA market. Since Sasol-Huntsman is a large supplier of MA, the closure of the plant following a refused authorisation would result in a loss of 35% of European capacity to produce MA. Since it is difficult to import MA, (for both technical and economic reasons) and capacity does not exist within other MA producers in the EU to take up this gap in the market, there would be a significant shortage in MA supply in Europe, with this leading to:

- Some Sasol Huntsman customers struggling to identify an alternative supply of MA and going out of business as a result;
- Other customers seeking to relocate (taking turnover and jobs) outside Europe closer to a reliable supply of MA; and
- Rising MA prices resulting from demand exceeding supply, which would feed into rising prices of consumer products made from MA derivatives.

50% of MA produced in Europe is used in the manufacture of unsaturated polyester resins which in turn are used widely in the construction, automobiles and leisure craft industries among others. Granting an Authorisation would ensure the continued supply of European-made MA to this sector where Sasol-Huntsman makes 50% of its sales. The UPR sector involves in the region of 8,000 companies and supports upwards of 100,000 direct employees across the EU and an Authorisation allowing the continued use of DBP would guarantee the supply of European-made MA for many of these companies, allowing them to compete with competitors from non-EU countries without

having to re-locate outside of the EU in order to obtain a reliable supply of competitively priced MA.

Sasol Huntsman is a merchant supplier of MA and does not engage in any other business. The plant utilises Huntsman technology which requires DBP and there is currently no suitable alternative to DBP in this use. An Authorisation would enable Sasol-Huntsman to continue to generate turnover of €100-120 million per annum, making a significant contribution to the local economy and employing around 50 people. In the event of a refused Authorisation, investments made by Sasol-Huntsman between 1997 and 2011 amounting to approximately €200 million would be lost, with loans to the value of €82 million taken out in 2008 to finance the most recent capacity expansion at the site still outstanding at the sunset date in February 2015.

It is also important to note that this use of DBP currently caters for almost half the sales of the only manufacturer of DBP in Europe, DEZA in the Czech Republic. This percentage is likely to increase in the future. If Authorisation is not granted and DEZA cannot sell this volume of DBP to Sasol-Huntsman, the remaining sales of DBP would be jeopardised as it may not be economic to continue production at significantly lower levels, putting jobs at risk as well as the supply of European made DBP for other uses, currently also being applied for Authorisation.

The Sasol-Huntsman MA plant is located on the Sasol Solvents site in Moers, Germany. The operations of the two companies are highly integrated with steam produced at the MA plant being used to generate power for the whole site. Closure of the MA plant under a refused Authorisation would result in significant increases in energy costs for Sasol Solvents and an increase in CO<sub>2</sub> emissions, as fuel oil would need to be burned to replace the energy lost. Additionally, Sasol Solvents would also lose income from service agreements in place with Sasol Huntsman for shared facilities at the Moers site, threatening their economic security and potentially jobs.

### **Residual risks to human health and the environment of continued use of DBP in the manufacture of MA**

DBP is used as a recovery solvent during the manufacture of MA. Filter changing, maintenance/cleaning, and sampling are carried out under strictly controlled conditions according to established standard operational procedures and utilising personal protective equipment on a mandatory basis (for which staff undergo regular training).

Sasol-Huntsman operates a comprehensive monitoring scheme to ensure worker protection and safety, collecting exposure data on a regular basis and taking any remedial action deemed appropriate. The results of a recent biomonitoring exercise conducted in 2012 shows exposures to DBP to be well below the DNEL values for dermal exposure to DBP issued by the RAC, supporting the exposure modelling underpinning the Chemical Safety Report (CSR) and proving the conclusion of the CSR that risks to workers are adequately controlled.

DBP is an industrial chemical with only industrial and professional uses. DBP used in the manufacture of MA has been measured at less than 100 ppb in the MA product itself. Furthermore, MA does not remain very long as free MA outside industrial use, as the anhydride is readily hydrolysed to maleic acid due to humidity in the air. Thus, it is by nature that free MA cannot exist in consumer products. Therefore, use of DBP in MA manufacture poses no threat to consumers.

In conclusion, exposures to DBP are maintained well below the effect threshold for the substance and as such, **the risks are adequately controlled**, meaning that no benefit to worker or consumer health would materialise should this Application for Authorisation be refused.

Regarding environmental releases, risk characterisation ratios calculated for the Chemical Safety Report are all well below 1, indicating that there are no risks from environmental contamination. There are no emissions of DBP to air or to soil from the plant at Moers, and all waste containing DBP is currently incinerated either on-site or at external combustion sites where it is completely destroyed in accordance with the approvals of local authorities.

As environmental emissions are effectively zero, i.e. well below the effect threshold for the substance, **the risks are adequately controlled**, and no benefit to the environment would materialise should this Application for Authorisation be refused.

### **Balance of benefits and risks to human health and the environment from continued use of DBP as a solvent in the manufacture of MA**

Table 1 below presents the benefits and risks to human health and the environment from continued use of DBP. Clearly the benefits significantly outweigh the risks as the latter are virtually zero.

<b>Table 1: Benefits and Risks from continued use of DBP in manufacturing MA</b>	
<b>Benefits</b>	<b>Risks</b>
Market supply guaranteed <ul style="list-style-type: none"> <li>- MA price levels maintained</li> <li>- Companies using MA remain in EU</li> <li>- Jobs secured</li> <li>- Price of consumer products maintained</li> </ul> Revenue of Applicant maintained <ul style="list-style-type: none"> <li>- Jobs secured</li> <li>- Loan repayments met</li> <li>- Capital investment not lost</li> </ul> Revenue of DBP supplier maintained <ul style="list-style-type: none"> <li>- Supply of DBP for other uses secured</li> <li>- Jobs secured</li> </ul> Business of suppliers to applicant maintained <ul style="list-style-type: none"> <li>- Revenue from service agreements assured</li> <li>- Jobs secured</li> <li>- CO<sub>2</sub> emissions kept low</li> </ul>	Emissions to environment – virtually zero, so risks adequately controlled Workers' health and safety – minimised, risks adequately controlled Consumer safety – DBP not present in consumer products, so zero risk

### **Important factors to be considered when defining operating conditions, risk management measures and /or monitoring arrangements**

The CSR demonstrates that worker exposure to the substance under the risk management measures and operational conditions prescribed in the relevant Exposure Scenario is already kept below the effect threshold.

Moreover, Sasol-Huntsman has actively demonstrated its intention to continuously improve its control of potential releases and exposure to DBP and has already put in place the systems for doing so, including periodic proactive bio-monitoring of workers.

### **Important considerations when assessing the duration of a review period for use of DBP as a solvent in the manufacture of MA**

The primary factor affecting the setting of an appropriate review period for an Authorisation relates to the time it may take to identify a suitable substitute and Huntsman is already actively involved in a R&D programme to identify suitable alternatives to DBP. The research involves a number of stages to identify first of all a substance with suitable properties and then further stages to assess its commercial viability. At each stage of the R&D programme it is possible that a potential candidate

might fail and in order to progress to the next level, increasing levels of funding are required which require additional approval for the investment. A potential candidate might fail at any level, setting the whole process back to an earlier stage. It is estimated that a minimum of 13 years (starting from 2013) would be required for Huntsman to identify an alternative and test its commercial viability prior to making it available for the replacement of DBP in commercial operations at the Moers site. Subsequently, a further 5 years may then be required to convert the Moers plant to the new absorption solvent.

Further important considerations include the fact that Sasol-Huntsman is committed in a number of service agreements with Sasol Solvents covering the supply of services and raw materials which run up to 2028. At the time of the sunset date in February 2015, loans secured for the expansion of the MA plant in 2008-2011 will still not have been re-paid and the company will still have outstanding commitments for a number of years to come.

Finally, it is clear that it would not be possible to convert the plant at Moers to any other technology (even one which is inferior in terms of technical efficiency or commercially) prior to the sunset date of February 2015 due to the time required to develop detailed engineering plans, secure investment funds and carry out civil works.