



# Report and recommendations of the Environmental Protection Authority



**Chlor-Alkali Plant - Kemerton**  
– inquiry under section 46 of the  
*Environmental Protection Act 1986*  
to amend Ministerial Statement 066

Coogee Chlor Alkali Pty Ltd

Report 1679

June 2020

## **Inquiry under section 46 of the *Environmental Protection Act 1986***

The Minister for Environment has requested that the Environmental Protection Authority (EPA) inquire into and report on the matter of whether the implementation conditions relating to the authorised storage capacity of chlorine at the proposal site (for Ministerial Statement 066) should be changed.

Section 46(6) of the *Environmental Protection Act 1986* requires the EPA report to include:

- (a) a recommendation on whether or not the implementation conditions to which the inquiry relates, or any of them, should be changed
- (b) any other recommendations that it thinks appropriate.

The following is the EPA's report to the Minister pursuant to s. 46(6) of the *Environmental Protection Act 1986*.



Dr Tom Hatton  
Chairman

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# 1. The proposal

The Chlor-Alkali Plant – Kemerton (the proposal) is for the design, construction and operation of a chlor-alkali facility at Kemerton, to supply the adjacent titanium dioxide plant. The proponent for the proposal is Coogee Chlor Alkali Pty Ltd.

The proposal was an original component of the SCM Chemicals Ltd, Chloride Process Pigment Plant, Kemerton and Operations at Australind proposal. The EPA assessed the proposal and published its Report and Recommendations (Bulletin 283) in July 1987. The Minister for Environment approved the proposal under Ministerial Statement (MS) 001 on 25 August 1987. MS 001 included conditions relating to the entire operation at the Kemerton and Australind sites. However, a portion of the Kemerton site, the Chlor-Alkali Plant, was owned and operated by Nufarm-Coogee Pty Ltd (now Coogee Chlor Alkali Pty Ltd).

On 24 March 1988, Nufarm-Coogee Pty Ltd submitted a Notice of Intent to separate environmental responsibilities from SCM Chemicals Ltd at the Kemerton site, and sought minor changes to some of the commitments of MS 001. In releasing its Report and Recommendations (Bulletin 336) in July 1988, the EPA determined that there were no significant environmental issues involved with the proposed division of responsibilities. The EPA concluded in Bulletin 336, that it was likely the EPA's objectives would be achieved, provided there was satisfactory implementation by the proponent of the EPA's recommended conditions.

The then Minister for Environment approved the proposal for implementation, subject to the implementation conditions of MS 066 (1 May 1989), for the Chlor-Alkali Plant in Kemerton, under the operation of Nufarm-Coogee Pty Ltd. The remaining plant continued to be operated by SCM Chemicals Ltd (now Tronox).

No environmental factors were considered by the EPA in Report 336 as it involved the administrative separation of responsibilities. However, the EPA recommended that the environmental conditions relating to the original proposal, imposed on SMC Chemicals Ltd, that relate to the chlor-alkali plant, be placed on the Nufarm-Coogee Pty Ltd proposal as appropriate. Therefore, the environmental factors considered as part of the original proposal (Bulletin 283, July 1987), in relation to the chlor-alkali plant have been considered here. These were:

- Air Emissions
- Waste Water.

In applying the *Statement of Environmental Principles, Factors and Objectives* (EPA 2020c) these factors are now represented by:

- Air Quality
- Inland Waters.

## Previously approved changes to the proposal or conditions

There have been no changes to the proposal or to the implementation conditions since MS 066 was issued.

## 2. Requested changes to conditions

In October 2019, the proponent requested the following changes to implementation condition 3 and Environmental Commitment 2.2.1 of MS 066:

- increase the maximum liquid chlorine storage inventory from 50 tonnes to 100 tonnes
- remove the limitation on chlorine storage tanks capacity, currently limited to 25 tonnes per tank
- remove the limitation on the number of tanks, currently limited to three.

Condition 3 of MS 066 states *“the proponent shall ensure that no more than fifty (50) tonnes of chlorine is stored at the Kemerton plant location at any time. Containers shall not exceed three in number nor 25 tonnes capacity each”*.

Condition 1 of MS 066 requires the proponent to fulfil the Environmental Commitments attached to MS 066. Commitment 2.2.1 of MS 066 also refers to the authorised capacity of chlorine storage at the site.

In December 2019, the Minister for Environment requested that the EPA inquire into and report on the matter of changing the implementation conditions of MS 066 for the Chlor-Alkali Plant – Kemerton relating to the authorised storage capacity of chlorine at the proposal site. This report satisfies the requirements of the EPA’s inquiry.

### 3. Inquiry into changing the conditions

The EPA has discretion as to how it conducts this inquiry. In determining the extent and nature of this inquiry, the EPA had regard to information such as:

- the currency of its original assessment of the SCM Chemicals Ltd, Chloride Process Pigment Plant, Kemerton and Operations at Australind (Bulletin 283)
- the currency of its assessment for the Proposed Separation of Environmental Responsibilities – Chlorine Process Pigment Plant - Kemerton (Bulletin 336)
- Ministerial Statement 066
- information provided by the proponent
- advice from relevant decision-making authorities
- any new information regarding the proposal's potential impacts on the environment.

#### EPA procedures

In conducting this inquiry, the EPA has considered and given due regard to relevant current and former policy documents. The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* (State of Western Australia 2016) and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA 2020b).

## 4. Inquiry findings

The EPA considered that the following are the key environmental factors relevant to the change to conditions:

- Air Quality
- Inland Waters.

### 4.1 Air Quality

The EPA's environmental objective for this factor is *to maintain air quality and minimise emissions so that environmental values are protected.*

#### Conclusions from EPA Bulletins 283 and 336

The chlor-alkali plant manufactures chlorine on demand for use by Tronox's adjacent titanium dioxide manufacturing plant. The chlorine is produced by the electrolysis of purified sodium chloride brine solution in ion exchange membrane electrolysis cells. The hot chlorine gas is cooled then dried with concentrated sulphuric acid. The dry gas is then compressed, condensed and liquefied for storage in refrigerated tanks located in a designated building. Stored chlorine is then vaporised and transferred by an export pipeline to the Tronox site according to operational requirements. Caustic soda (sodium hydroxide), sodium hypochlorite, hydrochloric acid and hydrogen are also produced on site as necessary for the operation of the plant, or for sale to other parties.

The original proposal (Bulletin 283) included storage of up to 100 tonnes of chlorine. However, the proponent at the time undertook a risk assessment on the basis of there being only 50 tonnes of storage capacity, not the 100 tonnes proposed.

To manage these impacts, the EPA recommended the following conditions:

- restriction of the total amount of chlorine stored on site to 50 tonnes
- limitation of the largest single storage vessel to 25 tonnes
- no more than three storage vessels.

At the time of the EPA's determination, there was no legislation in Western Australia to specifically manage dangerous goods or storage of chlorine.

#### Assessment of the proposed change to conditions

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Air Quality* (EPA 2020a).

The change requested in this proposal is to increase the storage capacity of the chlorine storage within an existing built for purpose facility and extend that facility to house an additional tank.

The proponent has undertaken a sensitivity analysis on the existing quantitative risk assessment (QRA) for the chlor-alkali plant to assess the risk associated with the increase in storage capacity and number of tanks. The QRA and subsequent sensitivity analysis was assessed against criteria set out in contemporary guidance, being the New South Wales *Hazardous Industry Planning Advisory Paper No. 4* (NSW Government 2011).

The results of this analysis indicated that the proposed increase in storage capacity would not represent a material increase in risk to the environment or neighbouring facilities above that of the existing operation (R4Risk 2019). The proponent has also undertaken a peer review of the analysis and work associated with the proposal which has confirmed this outcome (Risk Consult 2019).

Air emissions from the operation will continue to be minimised through a purpose built chlorine storage building. All air emissions from the chlor-alkali plant are directed through a chlorine absorption tower vent, Hydrogen Chloride (HCL) gas scrubber, steam boiler chimney, or hydrogen safety seal vent. Air emissions from the plant are currently regulated under Part V of the *Environmental Protection Act 1986* (EP Act) by the Department of Water and Environmental Regulation (Licence L6036/1988/13).

Prior to construction, the proponent will be required to apply for a works approval issued under Part V of the EP Act and undergo additional assessment of emissions and discharges. The current Environmental Licence (L6036/1988/13) for the facility will require amendment prior to implementation of the new infrastructure.

The site is considered a major hazard facility under the Dangerous Goods Safety (Major Hazard Facilities) Regulations 2007, administered by the Department of Mines, Industry Regulation and Safety (DMIRS). The EPA notes that DMIRS has advised that the proposed changes can be adequately regulated under the *Dangerous Goods Safety Act 2004*.

## 4.2 Inland Waters

The EPA's environmental objective for this factor is *to maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected*.

### Conclusions from EPA Bulletins 283 and 336

The original assessment undertaken in Bulletin 283 considered wastewater discharge in relation to the titanium dioxide plant. There were no discharges to water from the chlor-alkali plant. The impacts considered relevant to the chlor-alkali plant were related to the potential for spills from the storage tanks.

To manage these impacts, the EPA recommended the following conditions (condition 5 of MS 066):

- full height concrete bunding
- additional insulation to be applied to the concrete bunds
- full enclosure of the storage area.



## Assessment of the proposed change to conditions

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Inland Waters* (EPA 2018).

The proponent has not requested any changes to condition 5 of MS 066 as part of the requested change to conditions. The proponent has confirmed that the additional liquid chlorine storage tanks will be housed in a fully enclosed structure and within separate bunds. These bunds will be lined with thermal insulating tiles to a level required to contain a full loss of tank volume.

The EPA considers that the management of emissions and discharges from the construction of the additional storage tanks and associated infrastructure and the additional storage of the liquid chlorine can be adequately regulated under Part V of the EP Act, administered by the Department of Water and Environmental Regulation.

### 4.3 Other conditions

MS 066 contains other conditions not related to the key environmental factors discussed above. The EPA's recommendations regarding these other conditions are that they remain unchanged.

## 5. Conclusions and recommendations

### *Change to conditions 1 and 3*

The proponent has requested changes to Environmental Commitment 2.2.1 related to condition 1 and condition 3, in order to change the authorised storage capacity of chlorine at the proposed site, including:

- increase the maximum liquid chlorine storage inventory from 50 tonnes to 100 tonnes
- remove the limitation on chlorine storage tanks capacity, currently limited to 25 tonnes
- remove the limitation on the number of tanks, currently limited to three.

The EPA considers that potential emissions and discharges from the proposal can be appropriately regulated through the amendment of the existing License (L6036/1988/13) issued by the Department of Water and Environmental Regulation under Part V of the EP Act.

The EPA also acknowledges that the site is regulated under the Dangerous Goods Safety (Major Hazard Facilities) Regulations 2007, administered by DMIRS.

The EPA considers that it is appropriate to change condition 3 of MS 066 to allow for an increase to the maximum liquid chlorine storage inventory to 100 tonnes, and to remove the limitation on the number and capacity of chlorine storage tanks at the chlor-alkali plant.

### *Removal of Environmental Commitment 2.2.1*

The proponent has requested removal of Environmental Commitment 2.2.1 of MS 066. Commitment 2.2.1 is a repetition of the requirements of condition 3, therefore the EPA considers it appropriate to remove this commitment.

## Conclusions

In relation to the environmental factors, and considering the information provided by the proponent and relevant EPA policies and guidelines, the EPA concludes that:

- There is no significant new or additional information that changes the conclusions reached by the EPA under any of the relevant environmental factors since the proposal was assessed by the EPA in Bulletin 283 (July 1987) and Bulletin 336 (July 1988).
- No new significant environmental factors have arisen since EPA assessed the original proposal.
- The impacts to the key environmental factors are considered manageable, based on the requirements of existing conditions, and the imposition of the attached recommended conditions.
- The additional storage can be appropriately regulated through amendment and application of the works approval and licence issued under Part V of the EP Act.

- The proposed changes can be adequately regulated under the *Dangerous Goods Safety Act 2004*.

## Recommendations

Having inquired into this matter, the EPA submits the following recommendations to the Minister for Environment under s. 46 of the EP Act:

1. While retaining the environmental requirements of the original conditions of Ministerial Statement 066, it is appropriate to change implementation condition 3, and replace it with a new condition, and to remove Environmental Commitment 2.2.1 from Statement 066.
2. After complying with s. 46(8) of the EP Act, the Minister may issue a statement of decision to change condition 3 of Statement 066 and remove Environmental Commitment 2.2.1 from Statement 066 in the manner provided for in the attached recommended Statement (Appendix 1).

## References

EPA 2018, *Environmental Factor Guideline – Inland Waters*, Environmental Protection Authority, Perth, WA.

EPA 2020a, *Environmental Factor Guideline – Air Quality*, Environmental Protection Authority, Perth, WA.

EPA 2020b, *Environmental Impact Assessment (Part IV Division 1 and 2) Procedures Manual*, Environmental Protection Authority, Perth WA.

EPA 2020c, *Statement of Environmental Principles, Factors and Objectives*, Environmental Protection Authority, Perth, WA.

NSW Government 2011, *Risk Criteria for Land Use Safety Planning, Hazardous Industry Planning Advisory Paper No. 4*, Department of Planning, January 2011.

R4Risk 2019, Kemerton Chlor Alkali Plant, Increased Chlorine Storage Sensitivity Analysis, Release 2, unpublished report for Coogee Chemicals, July 2019.

Risk Consult 2019, Increased Chlorine Storage QRA Peer review Coogee Chlor Alkali Kemerton, Unpublished report for Coogee Chemicals, July 2019.

State of Western Australia 2016, *Western Australian Government Gazette*, No. 223, 13 December 2016.

# Appendix 1: Identified Decision-Making Authorities and Recommended Environmental Conditions

## Identified Decision-making Authorities

The following decision-making authorities (DMAs) have been identified for the purposes of s. 45 as applied by s. 46(8) of the *Environmental Protection Act 1986*:

Decision-making Authority	Legislation (and Approval)
1. Minister for Water	<i>Rights in Water and Irrigation Act 1914</i> (5C water abstraction licence)
2. Minister for State Development	<i>State Agreement Act</i> - <i>Pigment Factory (Australind) Agreement Act 1986</i>
3. Chief Executive Officer, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i> (Part V Works Approval and Licence)
4. Chief Dangerous Goods Officer, Department of Mines, Industry Regulation and Safety	<i>Dangerous Goods Safety Act 2004</i> (Storage of dangerous goods) <i>Dangerous Goods Safety (Major Hazard Facilities) Regulations 2007</i>
5. Chief Executive Officer, Shire of Harvey	<i>Planning and Development Act 2005</i> (Development approval)

Note: In this instance, agreement is only required with DMA 1 and 2 since these DMAs are Ministers.

## Recommended Environmental Conditions

### STATEMENT TO CHANGE THE IMPLEMENTATION CONDITIONS APPLYING TO A PROPOSAL

(Section 46 of the *Environmental Protection Act 1986*)

#### CHLOR-ALKALI PLANT - KEMERTON

**Proposal:** Design, construction and operation of a chlor-alkali facility at Kemerton to supply the adjacent titanium dioxide plant.

**Proponent:** Coogee Chlor Alkali Pty Ltd  
ACN 009 276 635

**Proponent Address:** Cnr Patterson and Kwinana Beach Road  
KWINANA WA 6167

**Report of the Environmental Protection Authority:** 1679

**Previous Report Relating to this Proposal:** 336

**Preceding Statement/s Relating to this Proposal:** 066

Pursuant to section 45 of the *Environmental Protection Act 1986*, as applied by section 46(8), it has been agreed that the implementation conditions set out in Ministerial Statement No 066, be changed as specified in this Statement.

**Condition 3 of Ministerial Statement 066 is deleted and replaced with:**

#### **3 Chlorine Storage**

3-1 The proponent shall ensure that no more than 100 tonnes of chlorine is stored at the Kemerton plant location at any time.

**Environmental Commitment 2.2.1 of Ministerial Statement 066 is deleted.**