



MINISTER FOR ENVIRONMENT

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

SCM CHEMICALS LTD PROPOSED OPERATIONS AT KEMERTON AND AUSTRALIND

This proposal may be implemented subject to the following conditions:

1. Adherence by the proponent to all the relevant commitments made in the ERMP, in the proponent's response to issues raised in the submissions and those raised by the Environmental Protection Authority (EPA) and in the Notice of Intent (NOI) for the Kemerton proposal (copy of commitments attached).
2. The preparation by the proponent in stages, of a comprehensive and integrated hazard and risk management strategy, to the EPA's satisfaction.

This shall consist of the following with the results being forwarded progressively when completed to the EPA:

- . the HAZOP study to be completed and submitted before construction commences and to be conducted in a manner approved by the EPA. This HAZOP study should especially discuss the risk effects of the safeguards removed due to the plant being located at Kemerton;
- . a final risk analysis report incorporating the plant design after HAZOP and (taking into consideration any additional safeguards/ modifications arising out of the HAZOP analysis), to be submitted soon after construction;
- . a hazard analysis update (including a fire safety study, and a study detailing the management of the commissioning stage and a study of emergency procedures) to be submitted before plant commissioning; and

- . an audit of risk and hazards to be submitted to the EPA upon request. Audit request by the EPA require the concurrence of the Minister for Environment.
- 3. No more than 50 tonnes of chlorine shall be stored at the Kemerton plant location. Containers shall not exceed three in number and 25 tonnes capacity each.
- 4. No sale of chlorine from the Kemerton site be permitted without a further specific assessment by the EPA and that the management of the transport of chlorine for commissioning, should be discussed with the relevant Government agencies prior to commissioning as well as meeting appropriate statutory requirements.
- 5. Safeguards for the Kemerton proposal shall be the same as those required for the chlor-alkali plant at Kwinana (EPA Bulletin 216) to the extent that these requirements provide an equivalent measure of safeguards as those at Kwinana and are relevant to the Kemerton proposal as determined by the EPA. In addition commitments made by the proponent, to install the following, shall be implemented:
 - . full height concrete bunding;
 - . insulation tiles in the bunds;
 - . a foam suppression system; and
 - . isolating valves on the main storage tanks and process items.
Storage tank isolation valves require two actuation points.
- 6. The proponent is responsible for the environmental performance of the chlor-alkali plant, regardless of the operating company.
- 7. The proponent's emergency plan and procedures are to be integrated with the proposed State Emergency Services' Bunbury Regional Counter Disaster Plan.


In addition, the proponent shall participate in the development of a fire management strategy for the Kemerton region and contribute materially towards its implementation.
- 8. The underflow from the thickener at the Kemerton site be treated in such a manner so as to prevent groundwater contamination.
- 9. The proponent shall not cause or allow any wastewater discharge to the Wellesley River. Accordingly, the proponent shall submit a proposal for an ocean wastewater discharge to the EPA for its assessment prior to construction.
- 10. The proponent install a chlorine scrubbing system on the chlor-alkali plant with sufficient back-up capacity to be able to absorb all of the chlorine produced at the full production rate for half an hour at the maximum projected plant output of 17 000 tonnes per annum of chlorine.

11. The Company's proposal for solid waste management and disposal from both sites be submitted to the EPA for assessment prior to completion of construction of the Kemerton plant.
12. The disposal site(s) for solid waste, including that generated during concurrent operation of both plants, must be approved by appropriate Government agencies including the Radiological Council prior to completion of construction of the Kemerton plant.
13. A radiation management programme shall be developed by the proponent for the commissioning and operation of the proposed plant to the satisfaction of the Radiological Council.
14. The proponent be responsible for ensuring that a detailed water supply proposal for the project be referred to EPA for assessment prior to commencement of construction.
15. The transport of reagents, especially titanium tetrachloride, be undertaken in a safe manner. The proponent is responsible for preparing appropriate transport safeguards and to this end shall prepare a contingency plan to the satisfaction of the EPA and other relevant Government agencies.
16. The safeguards for storage of titanium tetrachloride at the Australind site required by the relevant Government agencies should be taken into consideration in a HAZOP analysis.
17. The wastewater discharge to the Collie River from the Australind site should conform with the marine and estuarine water quality criteria in 7(2) of the DCE Bulletin 103 (1981) for the maintenance and preservation of aquatic ecosystems.
18. The proponent undertake periodic wastewater monitoring including:
 - . temperature of the wastewater discharge and of the surface waters of the Collie River an appropriate distance upstream and downstream from the point of discharge;
 - . pH, total dissolved solids, level of radioactivity, levels of chromium and manganese, and total suspended solids of the effluent;
 - . baseline (that is pre-discharge) and post-discharge characterisation of the benthos of the Collie River in the vicinity of the outfall; and
 - . volume and velocity of flow of the Collie River under low flow conditions.

The proponent shall also develop a monitoring programme in consultation with the Leschenault Inlet Management Authority and to the satisfaction of the EPA.

19. The proponent prepare a contingency plan at both the Australind and the Kemerton sites in consultation with the Leschenault Inlet Management Authority and to the satisfaction of the EPA, which addresses the management actions to be taken in the event of failure of any part of the effluent management or chemical containment and handling systems of the proposed plant as they may impact upon the Collie River or the Leschenault Inlet, or the ocean.
20. Notwithstanding the requirements of the pipeline for effluent discharge during the period of concurrent operations, the pipeline across Leschenault Peninsula be maintained until monitoring results of wastewater effluent discharge to the Collie River demonstrate to the EPA's satisfaction that unacceptable environmental impacts have not occurred.
21. The existing sulphuric acid plant and the existing sulphate-process plant (as described redundant in the ERMP) at Australind shall not operate beyond 30 June 1990 (or at an extension of time determined under the Pigment Factory (Australind) Agreement Act 1986) unless the Government is satisfied with the environmental performance of the proponent (which may include a period of a further 12 months testing of performance of the sulphuric acid plant beyond the cessation of the operation of the titanium dioxide sulphate process plant, where such a period is reasonably required to fully evaluate the performance) as measured against the following criteria:
 - . until 30 December 1987, the sulphur dioxide emissions from the Australind plant should not result in ground level concentrations of sulphur dioxide exceeding 1 000 micrograms per cubic metre averaged hourly in any residential area; and
 - . from the 1 January 1988, and until the cessation of the concurrent operating period, the sulphur dioxide emissions from the combined Australind plant should not result in ground level concentrations of sulphur dioxide exceeding 1 000 micrograms per cubic metre (averaged over three minutes) in any residential area.
22. The management strategy for liquid effluent disposal on the Peninsula until 30 June 1990 (or an extension of time determined under the Pigment Factory (Australind) Agreement Act 1986) shall maximise the use of existing lagoons and the reactivation of old lagoons so as to avoid further degradation of the northern end of the Peninsula. (The responsibility for this condition rests with the State Government).
23. The proponent liaise with the Department of Conservation and Land Management to ensure that the Company's operation and management programme for the Kemerton plant site is compatible with the management objectives developed for the Kemerton Community Park concept.

24. The proponent shall meet the reasonable costs associated with monitoring the environmental performance of the construction and operational phases of the Australind and Kemerton plants. These costs should equate to the equivalent of one full-time professional officer plus associated operating costs dedicated to this project.


BARRY HODGE, MLA
MINISTER FOR ENVIRONMENT

25 August 1987

ENVIRONMENTAL COMMITMENTS
MADE BY THE PROPONENT FOR SCM CHEMICALS LTD'S OPERATIONS
ON BOTH ITS AUSTRALIND AND KEMERTON SITES

1. CONSTRUCTION (S 10.2, ERMP)

- . During the construction phase of the project, the proponent would liaise with local authorities to ensure that noise, dust and traffic impacts were minimised.
- . All construction materials and practices would be in accordance with the relevant Australian or international codes.

2. OPERATION (S 10.3, ERMP)

The proponent has made the following commitments to environmental management during plant operation:

2.1 Wastewater:

- . The vegetation on the banks of the Collie River adjacent to the plant would be regularly monitored.
- . Surface runoff from the plant would be controlled.
- . Regular monitoring of the discharge to the Collie River would be implemented to ensure that the system operated as predicted.
- * . Waste waters would be discharged, after suitable treatment, to the Collie River.
- . No wastewater will be infiltrated at the site. The proponent will be filtering the thickener underflow to reduce its water content and disposing of the filtrate with the balance of the wastewater.
- . The wastewater treatment processes would be altered to reduce manganese levels to concentration of the order of (a few) parts per million.
- . The alkalinity of the wastewater will be raised to about pH 9.0 in order to precipitate manganese and heavy metals, although the latter are not expected to be present in significant quantities. The pH of the wastewater would then be adjusted to neutral level prior to disposal.

- . The lime treatment used to neutralize the wastewater is known to cause effective precipitation of the radionuclides under consideration. The modified wastewater treatment process to remove manganese will further remove radionuclides to levels much less than those discussed in the ERMP.
- . The proponent will regularly monitor the wastewater discharge and bed sediments in the Collie River for radionuclides; to assure the relevant authorities that the proposed disposal practice does not cause an unacceptable accumulation of radionuclides.
- . Special consideration will be given to controlling the impact of temperature upon marine (aquatic) organisms.
- . Commitments have been given to further modify the wastewater treatment should problems be detected. This monitoring will include analysis for heavy metals, even though these are not expected to be present in significant quantities.
- * . Regular monitoring of the wastewater discharge from the Kemerton site would be implemented to ensure that the system operated as predicted.

2.2 Aesthetics/Noise/Odour:

- . On-going control of dust would be implemented.
- . Noise levels within the plant would be in accordance with statutory requirements.
- . The plant site would be attractively landscaped, and buildings would be aesthetically designed.
- . There should be negligible odour impact to surrounding residential areas arising from the proposed development.
- . Odours would not originate from the proposed plant during normal operation.

2.3 General:

- . The plant would undergo regular preventative maintenance.
- . All waste products would be disposed of in an environmentally safe manner and in accordance with statutory requirements.

- . A detailed final risk analysis would be undertaken in conjunction with the plant designers to confirm or improve upon the recommendations made in the risk assessment (Cremer & Warner, 1986) (See also Sections 4 and 5).
- . A full hazards and operability study would be commissioned, and plant personnel would be trained in safe operating practices and emergency procedures. Training would be based upon the extensive experience available to the proponent from the existing Australind operations and chloride-process plants operating in the United States of America and the United Kingdom (see also Sections 5 and 6).
- . All wastes would be regularly monitored for radio-nuclides.
- . A centralised control policy would be implemented, whereby no changes to plant detail could be made until approved by the proponent's worldwide Central Safety Department.
- * . Groundwater extraction from any surficial aquifers would be conducted in such manner to avoid significant environmental impact on wetlands and their associated vegetation.
- . The proponent will advise the EPA of their decision on a chlor-alkali plant operator as soon as this is decided.

3. SAFETY FEATURES (S 10.4, ERMP)

- * The newly proposed plant will still contain tried and proven control technology and will still remain a very modern safe plant, equivalent to the latest installations effected elsewhere in the world by SCM.

The safety features that would be incorporated into the plant are summarised as follows:

3.1 Chloride-process plant:

- . Design and operation of titanium tetrachloride vaporiser and oxygen preheater in accordance with the British Standard BS 5885 (British Standards Institution, 1980).
- . Duplication and frequent replacement of temperature and pressure-sensing instrumentation in the chlorination section.
- . Careful process control, accurate temperature and pressure monitoring, even water-cooling of chlorinator and prevention of solids build-up in the overhead mains.

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 - . Maintenance and cleaning of heat exchangers will be done in a well ventilated open area on a concrete pad whose run-off is directed to the wastewater treatment plant.
 - . Duplication and frequent routine replacement of sensors in the oxidation section.
 - . Reliable logic system to control reactor trip system.
 - . Provision of an on-line scrubbing system for the 'hygiene snake' system (proprietary equipment), and scrubbing system stacks to be 46 metres high.

3.2 Chlor-alkali plant:

- . Automatic tripping of direct current power to the membrane cells.
- . Duplication of pumps, provision of back-up emergency power supply and appropriate instrument monitoring of the chlorine absorption plant.
- . Plant design to the standards of the Chlorine Institute (United States) and the Bureau International Technique du Chlor (Europe).
- . Gravity feeding of brine from storage tanks to membrane cells.
- . Monitoring of brine feed to individual cells.
- . Fitting of brine head tanks to cells to maintain differential pressure across the membrane in the event of sudden loss of brine flow.
- . Installation of emergency buttons in the cell room; controlled shut-down of chlorine manufacturing and liquefaction facilities.
- . Provision of a back-up absorption column.
- . Minimum instrumentation of absorption unit to consist of monitoring alarms for caustic concentrations and flows, chlorine concentration in the vent streams, low caustic levels in recirculation tanks and high temperature in the column(s) liquor.
- . Height of absorption unit column to be 20 metres.
- . Absorption unit that allows for electrical voltage fluctuations and power failures; provision of a diesel generator as a back-up to drive the caustic recirculation pumps and extraction fans.

- Chlorine to be discharged from the chlorine storage tanks by Nitrogen Padding.

3.3 Storage:

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 - Total storage capacity of approximately 50 tonnes of liquid chlorine as intermediate storage between the two process plants with average storage of 25 tonnes.
 - Design of storage vessels and supports to withstand the worst foreseeable earthquake loading.
 - Fully refrigerated liquid chlorine storage at -34°C .
 - Insulation of storage vessels, and operation at ambient temperature.
 - Except for a blanked drain connection, no bottom connections on the chlorine storage vessels.
 - Elimination of the possibility of hydrogen/chlorine explosions in chlorine storage tanks by appropriate design of the membrane cell plant.
 - Liquid chlorine will be transported to the storage tank at -34°C and maintained at that temperature.
 - Installation of remotely-operated valves on the liquid chlorine line from the liquefiers to the storage area, and the main chlorine connection on each tank, these being able to be operated either locally, from a safe location or from the control room.
 - Design of storage vessel instrumentation and relief facilities in accordance with recognised codes of practice (eg Bureau International Technique du Chlor).
- *
 - Chlorine storage tanks will be individually banded to full height with concrete bands.
- *
 - The bands will be lined with insulating tiles to prevent rapid heat transfer from the band to the liquid chlorine.
- *
 - Foam suppression - foam generators will be installed in the titanium tetrachloride and chlorine storage areas to provide a stable insulating barrier on top of the chlorine to suppress gas evolution.
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 - Isolating valves will be installed on the main storage tanks, as well as excess flow check valves.

3.4 Layout:

- . Location of air separation plant away from titanium tetrachloride storage areas.
- . Location of hydrogen away from chlorine compression and liquefaction areas.
- . Location of liquid chlorine and titanium tetrachloride pipelines away from the bottom rung on pipe tracks, particularly across roads;
- . Protection of storage vessel areas by traffic barriers (kerbing).
- . Design of layout such that cranes may remove items for maintenance without having to lift over storage vessels.
- . Design of plant such that close coupling of each section to minimise chlorine inventory is ensured.

3.5 Maintenance:

- . Preventative maintenance scheme to replace vulnerable equipment before a failure becomes likely.
- . The chlorine sensor in the vent gas line would be maintained such as to provide reliable and accurate monitoring with provision to inject caustic into the scrubber should chlorine be discovered. The maintenance interval for the sensor would be reviewed during HAZOP.
- . Regular and frequent maintenance and testing of all sensors as required by service duty.

3.6 General:

- . Use of a non-explosive grade of coke.
- . Use of corrosion monitoring techniques such as ultra-sonic thickness surveys.
- . Design of fuel management system in accordance with BS 5885 (British Standards Institution, 1980) on prevention of explosions.
- . Ability to operate plant from the control room for sufficient time to enable safe shut-down from there.
- . Installation of chlorine detectors at appropriate points of the plant site.

4. EMERGENCY PLAN

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 - . The proponent's emergency plan and procedures will be integrated with the proposed State Emergency Services' Bunbury Regional Counter Disaster Plan.
 - . The proponent will afford all practical co-operation in the formulation of public emergency and contingency plans.

5. MONITORING AND AUDITING (S 10.5, ERMP)

- . Regular safety audits would be conducted to monitor the effectiveness of the proponent's commitments to safeguard people and property, and to ensure that they were being completely executed.
- . Hazard and risk management programmes are in place at all sites and are monitored and audited currently by the Manager - Loss Prevention in Baltimore. A similar comprehensive programme is being developed for Bunbury, modelled substantially on the well-proven Stallingborough system.
- . Significant interchange of appropriate personnel will be required during development of the programmes. Performance thereafter will be audited by Baltimore on a regular basis for hazard, safety and industrial hygiene management standards, as for existing sites.
- . A further external audit on operations will take place via a system of "Permission for Change" which operates already on our existing plant, whereby all significant process changes are notified formally to Stallingborough, prior to implementation, for technical and hazard review. No changes are implemented without formal approval from the Hazard and Risk Manager at Stallingborough.

6. TRAINING

- . Overseas training will take place at all levels down to, and including Supervisor/Foreman.
- . Senior operator and Shift Supervisor training has commenced locally, utilising 27 and 18 week courses specifically designed in conjunction with Bunbury TAFE.
- . Standard operating, process control, maintenance and safety procedures are being developed in conjunction with our Stallingborough and Baltimore site personnel. Full procedure manuals are available from all existing sites and a set of Bunbury specific manuals will be developed well prior to start up, to facilitate training.

7. DECOMMISSIONING (S 10.6, ERMP)

Unlike a mineral development project whose life-span is limited to the period over which a particular resource can be exploited, the proposed plant does not have a planned operational life, although the proponent estimates this to be at least fifty years.

Decommissioning might simply involve the plant being used for other purposes, in which case, another environmental impact study would be required; or could involve dismantling and removal of the facilities from the site.

NB. * Indicates modifications or additions proposed in the proponent's Notice of Intent (June 1987).

WESTERN AUSTRALIA
MINISTER FOR ENVIRONMENT

STATEMENT TO AMEND CONDITIONS APPLYING TO A PROPOSAL
(PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE
ENVIRONMENTAL PROTECTION ACT 1986)

PROPOSAL: CHLORIDE PROCESS PIGMENT PLANT,
KEMERTON AND OPERATIONS AT
AUSTRALIND (176-1)

CURRENT PROPONENT: SCM CHEMICALS LTD

CONDITIONS ORIGINALLY SET ON: 25 AUGUST 1987

Condition 1 has been amended to read as follows:

1. The proponent shall adhere to all the relevant commitments made in the Environmental Review and Management Programme, in the proponent's response to issues raised in the submissions and those raised by the Environmental Protection Authority and in the Notice of Intent for the Kemerton proposal (copy of commitments amended on 8 January 1992, attached).

The following condition is inserted following condition 24:

25. No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister for the Environment has advised the proponent that approval has been given for the nomination of a replacement proponent. Any request for the exercise of that power of the Minister shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

Conditions 3, 4, 5, 6 and 10 have been deleted.



Bob Pearce, MLA
MINISTER FOR THE ENVIRONMENT

5 MAR 1992

Note:

Conditions 2, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24 remain in force.

Published on

6 MAR 1992