

Emissions to Air

For the period 2002 to 2006, more National Pollutant Inventory (NPI)-listed substances showed an overall trend of decreasing (or stable) annual emissions to air, than those that increased.

A recent review of ambient air quality within the Kwinana air-shed¹ found that “none of the substances monitored [including PAHs² and Sulphur Dioxide] are likely to result in significant impacts on either the community or industry at the current time”.

Generally the absolute magnitude of emissions is not presently considered to be having an unacceptable impact on ambient air quality.

Furthermore, for each particular substance, only one or two facilities contributed to the trend of increased emissions of these products of combustion. Reasons for this are given in the full report, but are primarily related to a regional unavailability of natural gas as a fuel source and the necessity, therefore, to burn more coal for power generation.

When these “unavoidable” incidences of coal burning facilities are excluded from analyses, the net emissions from all other facilities exhibit either a stable or decreasing trend of Sulphur Dioxide emissions between 2002 and 2006.

Case Study:

For example, Kwinana Power Station can use natural gas, coal or distillate to fuel its power generating plant. When fuelled by coal, power station emissions of Sulphur Dioxide and Hydrochloric Acid are higher than when fuelled by natural gas or distillate. Basically, the trend of increase in these types of emissions from the Kwinana Power Station, results from the recent supply limitation of gas resulting in a necessity to burn more coal. As Verve Energy is supplier of last resort it has an obligation to supply electricity (to both domestic and industrial markets), often with no choice in the fuel used.

Greenhouse Gas Emissions

For the nine full-member KIC facilities for which information was available over the period 2003 to 2005, annual net greenhouse gas emissions were generally stable at about 6 Mt CO₂e.

Emissions to Land

The only land-emitted NPI substances consistently reported by multiple facilities in the KIA were heavy metals, all of which decreased or remained stable. Estimates of net annual emissions of representative heavy metals (arsenic, chromium [III], lead, nickel and zinc) to land decreased considerably between 2002 and 2003. Further marked decreases in emissions of lead and zinc to land occurred between 2003 and 2006; whilst net annual emissions of arsenic, chromium [III] and nickel were generally stable over the same period and well within emission standards.

Emissions to Water, Water Consumption and Recycling

¹ *Review of the Department of Environment's Background Ambient Air Quality Study Preliminary Results and the Implications to Community / Industry.* Report prepared for the Kwinana Industries Council, July 2006 by EVNIRON Australia.

² PAH = Polycyclic Aromatic Hydrocarbons: a group of over 100 chemicals of which the most common are formed by the incomplete combustion of coal, oil, petrol, wood, tobacco, garbage, or other organic materials.

Net annual nutrient (total N and total P) emissions to water exhibited an overall trend of decrease over this period. Over the same period, net annual emissions of indicative heavy metals (arsenic, chromium [III], lead, nickel and zinc) generally decreased or have remained stable since 2002.

Ten full-member industries of the KIC provided water consumption data for their facilities over the period 2003 to 2005. Net consumption of both scheme and ground water during this time was generally stable, with these facilities consuming about 4 GL of scheme water and 9-11 GL of groundwater annually.

In comparison to a recent assessment made in 2006, these ten facilities represent about 70% of the water consumption of all KIC member companies (i.e. including associate members), and the greater dependence on groundwater (by a factor > 2) is representative of all KIC industry.

However, scheme and ground water only represents about 18% and 39%, respectively, of the fresh water input used by KIC-member industry. The Kwinana Water Reclamation Plant, commissioned in November 2004, provides an additional large input of the total fresh water supply and this facility has been case-studied regarding its positive influence both on water re-use and diversion of contaminant emissions from Cockburn Sound to the deeper ocean.