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Application of Industrial Symbiosis for Sustainable Industrial Development

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Era global demanding an industrial product to be competitive in the international market. Efficient use of resources and energy in the industrial processes give an economic and environmental benefit. Industrial waste generation can be reduced as small as possible to prevent environmental pollution. Waste treatment is the last option in the environmental management of chemical industry. Increasing efficiency through the application of clean technologies in the development of chemical industry is very essential in the micro, meso and macro level. Application of clean technologies in the chemical industry at the micro scale is in the form of development of green processes, at the meso scale by the implementation of eco-efficiency and at the macro scale by developing eco industrial park. Industrial waste is converted into new products (waste to product). Industrial waste from a factory used as raw materials for other industries. As a case study, for example, is the use of combustion emissions containing carbon dioxide causes global warming is processed into liquid and solid carbon dioxide (dry ice) through purification, liquefaction and solidification. Industrial symbiosis subsequently used as the basis for sustainable industrial development that combines aspects of process efficiency, environmental and social.