

15.3 **Elimination of CO₂ Emissions from Plants that Produce Motor Fuels from Oil Shale Ore**

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There is substantial worldwide concern regarding the release of large quantities of carbon dioxide from industrial plants. Oil shale processing plants have been cited as potential significant contributors to this problem. At the 27th Annual Oil Shale Symposium, we outlined a new processing technique that greatly reduces CO₂ emissions to the atmosphere.

Main sources of CO₂ emissions to the atmosphere from a typical surface oil shale plant are:

1. The release of CO₂ from the production of heat used by the kiln to thermally liberate the shale oil and other high temperature processing steps
2. The CO₂ resulting from the production of hydrogen required to treat and upgrade the liberated shale oil.
3. Potential CO₂ released from the shale rock carbonates during processing, including the burning of the carbon residue in the spent shale.

The presentation will outline the companies work during the past year, and the process solutions developed by the authors for the elimination or removal of a high percentage of the CO₂ from these process sources. Concepts include patent pending and patent disclosed technologies. Technical studies have been made estimating the costs and the impact on overall oil shale process economics, using these process steps for CO₂ elimination or capture. A new process for separation of CO₂ from coal-gasification-produced hydrogen will be presented. A small pilot plant, using an indirect fired rotary kiln and other important equipment, has been designed and is under construction by CRE Energy, which will demonstrate these process innovations.