

## **Health and environmental risk analysis for oil shale**

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Twenty years ago, an analysis of the potential human health and environmental risks of a hypothetical one-million-barrels-per-day oil shale industry was performed. The purpose of this analysis was to aid in the formulation and management of health and environmental research programs to provide the information for the important decisions when the oil shale industry is both economically and politically viable. This project established relevant health and environmental risk estimates along with the associated uncertainties in these estimates. The results indicated that the primary public health concern was from the air pollutants released during the numerous operations to produce shale oil and resulting products. The workforce risks dominated the public exposures with 60% of the expected fatalities. The occupational health risk, primarily pneumoconiosis followed by chronic bronchitis and cancer, are of key concern for the workforce. On a life-loss-expectancy, the worker health and safety was expected to reach the established norms for the 1980's. Recent advances should improve these norms through appropriate management for a large-scale industry based on mining, solids handling, refining and transportation. Ecological risk measures were controversial and highly uncertain. The management of the water resources of the entire region will be a key factor of the potential environmental impacts. Any large-scale development will modify the recreational uses of the region. Proper mitigation can result in improved access and uses of these resources. Applying the extended knowledge base in the past 20 years to update this analysis will aid in the difficult decision tradeoffs for a full-scale oil shale industry in the USA.