

### Petroleum Extraction from Oilsands

*Topic:* With increasing petroleum prices, it is becoming more economically feasible to perform petroleum extraction from oilsands, a very expensive and environmentally detrimental process. It is important to understand what is involved in the extraction process and how the byproducts affect the surrounding environment.

*Keywords:* petroleum extraction, oilsands, Canada, wastewater, treatment.

It is important to understand basic information about the treatment of wastewater that contains insoluble oil. Typical treatment systems used to remove oil from water can be chemical and physical. These treatment methods are presented and described in *Environmental Engineers' Handbook*. Chemical treatment helps aid the separation of oil and water by adding sulfuric acid and sometimes lime at a higher pH. Physical treatment involves separation by use of settling tanks and skimmers to remove oil that floats to the surface [2]. *Mine Water Hydrology, Pollution, Remediation* is a relatively current text book that provides thorough information about multiple aspects of mining and wastewater. Passive treatment of polluted mine waters is an additional treatment method described that utilizes naturally occurring chemicals and biological organisms [1]. These sources provide sound background knowledge in regards to general treatment options used in mining and petroleum extraction. The following journal article sources address particular issues within the topic.

A more specific type of bitumen extraction process is examined using a warm slurry extraction process and the effects from oilsands properties and process water chemistry. Oilsands contain a variety of components that can affect the extraction process such as the size of silica sands and the type of clay minerals in the oilsands [3]. On the treatment end of oilsands extraction, froth treatment is investigated by using two dilution methods. The two methods described are the aromatic solvent (AS) method and the paraffinic solvent (PS) method and the effectiveness of the methods is determined by examining the recovery of bitumen and the water content within the bitumen [6]. Using oilsands as industrial waste is another aspect incorporated in the treatment of waste. Oil and water mixtures can be separated by absorbing the oil out with fluid coke. This coke can be reacted to be used as a fuel and ash byproduct can be potentially used to treat wastes in other applications, such as treating acid mine drainage [5]. The environmental effects were examined by using fathead minnows as indicators in oilsand-processed wastewater. The growth of fathead minnows exposed to wastewater was compared to growth of minnows in non-wastewater environments. Size of fathead minnows exposed to wastewater were smaller than non-exposed fish [4], indicating the effect of oilsands extraction on a specific organism.

## Works Cited

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