

TECHNOLOGIES IN STEM EDUCATION

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Human Influence on the Global Carbon cycle

First, students will be introduced to oil geology. Students will learn to determine different rocks that are important for the formation and extraction of gas and oil. These rocks are basalt, sandstone, limestone, slate and black slate. Students will add a little drop of water to each rock and if the drops enter the rock, it will be able to store oil. If it is not, it will be able to prevent the oil from escaping. Or it may even be a source for the oil formation. Students will match a short description of each rock with the correspondent rock.

Second, students will learn to create a model for the formation of faults to trap the oil and gas.

Third, they will extract oil from chalk cores. They will receive two cores – one with oil and one without oil. Since we know the density of calcite (the mineral the chalk cores are built from), we can calculate the volume without airholes (only the mineral). And by using math we can calculate the total volume of the chalk core (the mineral and air bubbles). The difference between these numbers, are the volume of air bubbles. These air bubbles are very interesting, since they may store oil. Therefore we can calculate the maximum amount of oil in the chalk core and compare it to the volume gained from the experiment. Student will gain oil from the chalk cores by submerge it into water.

Finally, students will learn they can use their knowledge from oil geology to find suitable underground storage facilities for captured CO₂. This is very interestingly since geologist initially explored the underground to obtain oil. But today, geologists are starting to explore the underground to store captured CO₂ and thereby reducing the effects of global warming. Student will discuss whether it is a great and safe opportunity to prevent global warming or if there are better alternatives.



Fig. 1: Different rocks that are important for the formation and extraction of gas and oil.



Fig. 2: A model for the formation of faults to trap the oil

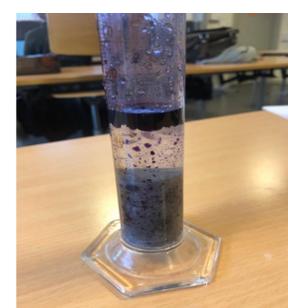


Fig. 3: Extraction of oil from chalk cores