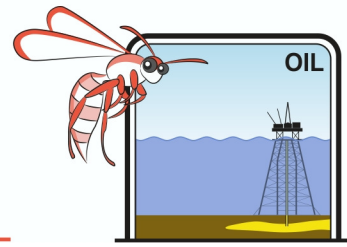
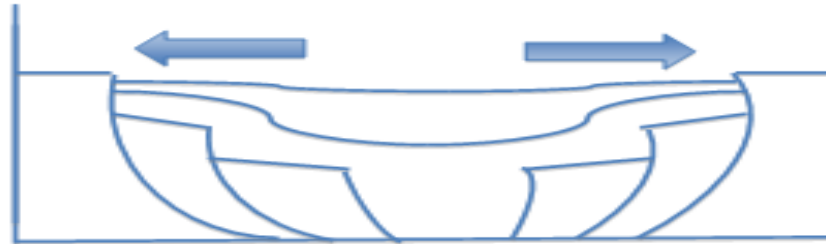


## Formation Of A Source Rock - Teacher Background



During ancient geological times Australia, India, Africa, New Zealand and Antarctica were welded together to form the super-continent of Gondwanaland. About 184 million years ago the super-continent began to break up and the present continental plates started to move apart. Continental crust between the separating plates was stretched thin and split by a series of faults. The stretched crust then sagged to create a marine sedimentary basin.

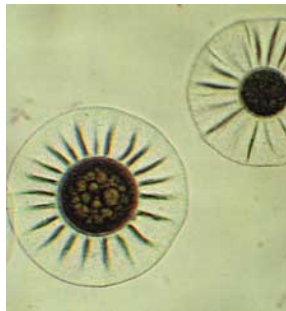


### **Interesting Fact**

***Five of the seven sedimentary basins in Western Australia have known hydrocarbon accumulations.***

Weathering and erosion on the continent produced sand and mud that poured into oceans filling a progressively deepening basin. A very small amount of dead land organisms (plants and animals) would be incorporated in these sediments because most would have decomposed naturally on exposure to weather, scavengers and bacteria. Shallow coastal and near coastal burial of mostly vegetable matter resulted in the formation of coal and methane gas deposits under anaerobic (oxygen poor) conditions. Coal measures in Collie, Coalseam Reserve and offshore of our northern coast were created under such lagoonal, swampy conditions.

In the ocean however, a continuous “rain” of dead plankton (microscopic marine plants and animals) falls into the depths where the lack of oxygen inhibits both scavengers and decomposition. These are rapidly buried under fine sediments brought from the land.



Picture of plankton <http://resources.schoolscience.co.uk/spe/knowl/4/2index.htm?origin.html>

As the basins deepened younger sediments piled on those below and they sank deeper into the Earth becoming hotter and hotter. Rather like being in a great pressure cooker they became squashed and cooked.

### **Interesting fact**

***The Carnarvon Basin accounted for over 90% of Western Australian and over half of the total Australian hydrocarbon production in 2011.***

Sediments also de-watered as they became compressed to form “source rocks”. Source rock types in Western Australia are organic shale, coals and limestone.