



**Figure 14-10.** Petroleum products are produced by distillation. Various fractions condense and are collected at different temperatures that correspond to the height of collection in the distillation tower. As can be seen, there are significant differences between turbine engine fuel and ordinary AVGAS.

### Turbine Engine Fuel Issues

Purity issues related to turbine engine fuels are unique. While AVGAS experiences similar issues of solid particle contamination and icing concerns, the presence of water and fuel-consuming microbes is more prominent in jet fuel, which has different molecular structure and retains water in two principal ways. Some water is dissolved into the fuel. Other water also is entrained in the fuel, which is more viscous than AVGAS. The greater presence of water in jet fuel allows microbes to assemble, grow, and live on the fuel.

Since turbine engine fuels always contain water, microbial contamination is always a threat. The large tanks of many turbine engine aircraft have numerous areas where water can settle, and microbes can flourish. Areas between the fuel tank and any water that may come to rest in the bottom of the tanks is where the microbes thrive. These microorganisms form a bio-film that can clog filters, corrode tank coatings, and degrade the fuel. They can be controlled somewhat with the addition of biocides to the fuel. [Figure 14-11] Anti-ice additives are also known to inhibit bacterial growth.