Snippets

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GLOBAL WETTING AND DRYING

Rivers and streams in some parts of the world will diminish in flow during the next 50 years while waterways in other parts will rise in water flow according to climate simulations. Drying could contribute to droughts and wildfire in western United States. Other areas identified for less water flow are the Mediterranean region, the Middle East, central and Southeast Asia. Eastern North American and other areas with increasing rainfall may face excess floods according to a USGS study. Another study by people at the Scripps Institution predicts that global warming will reduce water availability for about 1 billion people. The study of the two groups of people appears in Nature (v. 438), Nov. 17, 2005. There are skeptics of the predicted results. The article identifies the effect of global warming on the climate of the world - 'areas that are already wet are likely to get wetter-areas that are already water stressed are likely to feel it more in the future.' Of particular concern is the effect of global heating and rising temperatures in snow-covered mountains and snow-fed rivers.

Source: Harder, Ben. Science News 168(21): 325–326, November 19, 2005.

SOLID-LIQUID SEPARATION

An update on equipment used for solid-liquid separation calls to our attention new equipment for meeting requirements for environmental control, health needs, economy and efficiency of operation, and labor utilization. “From coarse screens to virus-stopping membranes, cartridges to centrifuges, this update has something for almost every application.” The article lists and briefly describes manufacturers of equipment and identified by edlinks.che.com/4823-numbers. There seems to be a trend in the industry to include:

1. High value applications in pharmaceuticals and fine chemicals.
2. Coatings and materials that withstand certain chemicals and are easy to clean (stainless steel type 316 and Hastelloy C-22 materials).
3. Applications for the nanoparticulate industries where it is necessary to concentrate very small particles in dilute suspensions.
4. Improved and new models of centrifuges.
5. Filter equipment originally designed for the food industry is being used or modified to remove solids from industrial wastewater.
6. Availability of testing equipment to evaluate the performance of filters and other separation devices.

Source: Butcher, Charles. Solid to the Left, Liquids to the Right. Chemical Engineering 113(13): 20–23, December 2005.

SYMMETRY

Symmetry is of interest in science and chemistry. The C60 molecule (fullerene) exemplifies the beauty of symmetry. Much more complicated molecules termed clusters formed from simple ingredients can also have symmetry or at least be highly symmetric. The article discusses examples of fullerene-like clusters. Spherical clusters will play an important role in nanotechnology because of their relative inertness and stability. Additional desirable properties include solubility and some desirable structural features such as small-scale cavities and pores. “The structure of cavity – encapsulated molecules - for example water molecule assemblies - is particularly exciting,” and is of particular interest to readers of this Journal.

Source: Muller, Achim. The Beauty of Symmetry. Science 300(5620): 749–750, May 2, 2003.