Windblown Dust from Desert in a Reservoir: A Dynamic Environmental Problem

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High winds can raise large amounts of dust from areas of dry, loose, exposed soil; carry them kilometers above the ground and then deposit the dust over areas along the wind-travelling path causing environmental problem. The dust will be a serious health concern if it contains significant amount of particulate matter less than 10 micrometers in diameter (or PM10). These particles are small enough to be drawn into the lungs. More recent concerns about health problems have put the greatest focus on particles smaller than 2.5 micrometers (PM2.5). Windblown dust is normally caused by a combination of weather conditions, the natural environment and human activities. There are many sources of dust such as the soil disturbance during construction activities and agricultural tillage operations, traffic on unpaved roads and parking lots, cleared vacant land areas as well as disturbed and undisturbed desert. Many techniques have been developed and applied to minimize and/or control the dust at its sources. However, combating the windblown dust from desert that is formed in a "live" reservoir is extremely challenging. This presentation uses an existing case to highlight the many environmental, social and health problems that have been caused by the windblown dust from desert that exists in a large man-made reservoir for hydropower generation purpose. Environmental impact is considered to be significant if the dust source is not controlled. However, an innovative approach has to be employed as none of the conventional windblown dust control techniques is applicable.