

Aggregates Industry Environmental Challenges

Some activities associated with aggregate extraction and processing may raise environmental concerns including the potential for increased dust, noise, and vibrations; physically altered landscapes and habitats; and impacts to surface and groundwater. These concerns can be monitored, controlled or mitigated by the aggregate mining industry with available technology and engineering. The following sections define some of these environmental concerns and the ways they are being addressed by IAAP producer members.

Air Quality

Much of the dust attributed to mining operations is not unlike those associated with any construction project or farming operation. Dust may be the most obvious concern because of its visibility both in the air or when it settles. Known as “fugitive dust,” it fits into a category recognized by the USEPA as being between 2.5 and 10 microns in size.

Fugitive dust from an aggregate operation is the result of wind blowing over stockpiles and exposed soil; blasting, crushing, or sizing of materials; moving of materials on conveyers and trucks; falling material being loaded into trucks or stockpiles; and ground abrasion where truck wheels kick up dust. Aggregate operations are just one source of dust; other common area wide sources include industrial plant emissions, vehicle exhaust, tire wear, farming operations, garbage incineration, and forest fires.

IAAP producer members address air quality concerns through facility plans that take into account prevailing wind direction and below grade equipment installation when possible. Processing and handling equipment may be fitted with water spray equipment or enclosures that minimize dust. Dust generated by haul trucks can be minimized by properly distributing loads; requiring them to be covered by tarps; paving roads leading out of the facility; installing wheel wash systems; and spraying water on road surfaces.

Noise

Noise from aggregate production comes from equipment or machinery used to remove overburden, or process, transport, and load the products. Noise reduction can be achieved through proper site design which places buildings, stockpiles, earthen berms, and trees or bushes to act as sound buffers. Processing plants are often enclosed within a building or shielded by other structures to reduce noise. Equipment is fitted with proper mufflers or noise reducing enclosures. IAAP producer members place a high priority on noise attenuation at their property boundaries.

Vibrations

Vibrations may come from the processing plant and as a result of blasting. In blasting, explosives are used to break the rock from its geological formation before it is further crushed. This creates both air and ground vibration. Air vibrations dissipate as they are absorbed by hills, vegetation, and man-made structures such as earthen berms, buildings and so on. Ground vibrations generally dissipate as they travel farther away from the site. The geological makeup of surrounding areas has a direct effect on how far these

vibrations will travel. To prevent damage to surrounding structures, IAAP producer members are required by law to maintain vibrations from blasting below a prescribed level which may be measured by a seismograph.

Individuals who conduct blasting operations are required to be trained and licensed by the State of Illinois. During their training, they learn how to design a blast to achieve maximum rock breakage while minimizing ground and air vibrations. Vibrations represent wasted energy and given the high cost of explosives they are not desired. Explosives and blasting are regulated by the Illinois Department of Natural Resources' Office of Mines and Minerals; the Federal Bureau of Alcohol Tobacco and Firearms, and the U.S. Department of Labor's Mine Safety and Health Administration.

Additional information about the laws and regulations governing aggregate blasting can be found at: <http://www.dnr.state.il.us/mines/bed/aggblast.pdf> and <http://www.dnr.state.il.us/mines/bed/explosive.pdf>

Physically Altered Landscapes and Habitats

IAAP producer members are committed to responsible land stewardship practices during the life of their mines. Properly designed and operated aggregate operations can minimize the impact to surrounding landscape, nature and the environment. When mining operations cease, each site can be converted to another beneficial use. In order to put aggregate mining into context, according to the American Geological Institute (2004), the land altered to build a community or highway is about one hundred times greater than that which is required to provide the aggregate for those purposes.

Aggregate mining changes an undeveloped area or agricultural land to something dramatically different; however, the physical impact can be controlled through thoughtful site planning and careful design. Site planning includes environmental impact and habitat surveys, as well as a careful examination of the geological formation to determine the amount and suitability of aggregate resources available. Visual impact can be minimized through sequential reclamation of surface mined areas and constructed buffers/berms or natural screening of ongoing mining operations with trees and shrubs.

In many cases, a producer member is required to secure a State reclamation permit to return the land to a condition that will allow an appropriate use when mining has ceased. A condition of the reclamation permit requires the posting of a Surety Bond or Letter of Credit as collateral.

Aggregate producers continue to address environmental issues and actively reclaim their properties to allow new beneficial uses once mining is completed. Abandoned stone quarries in Illinois have been turned into storm water-detention basins, golf courses, fishing lakes and industrial and commercial developments. Many people in northeastern Illinois are realizing that reclamation of sand-and-gravel pits into residential communities can prove beneficial to everyone. One IAAP member was awarded the National Stone Sand and Gravel Association's 2004 Silver Environmental Eagle Award. This award recognized the accomplishments of the producer for implementing a consecutive

reclamation program that continually generates new aquatic and prairie habitats, while minimizing the total “active” areas of the mine.

Additional information about laws and regulations governing mine reclamation can be found here: <http://www.dnr.state.il.us/mines/bed/aggreclaim.pdf>

Surface and Groundwater

Potential surface water impacts from aggregate mining operations include erosion and sedimentation as a result of the removal of vegetation and soil in order to expose the aggregate. Proper excavation techniques and site planning of roads, ditches, and work areas will help to minimize these effects. Washing sand and gravel requires large amounts of water to remove silt and fines. This process is accomplished using a “closed loop” system that recycles water using sedimentation ponds on the processing site.

Some sand and gravel operations dredge the product from below the water’s surface. Whether above or below the water table, pits and quarries have a beneficial effect on the surrounding hydrological system by catching and retaining rain and snow melt which then recharge groundwater reservoirs.

Most aggregate producers are required to maintain a spill prevention control countermeasure (SPCC) plan. This plan allows for careful storage of oil and gasoline in properly designed containment facilities that protect water from accidental contamination.

IAAP producer members strive to be responsible members of their communities. Aggregate mining companies work through the IAAP and its various committees to address environmental issues and industry regulation. By working with the government agencies regulating this industry, careful construction plans, detailed analysis of geological and hydrological characteristics of a site, continuing training for persons conducting blasting operations, and sequential mine reclamation are being accomplished and will protect our vital resources for generations to come.