Green Remediation

Green Remediation is the name applied to the use of "Green" technologies for the environmental restoration of contaminated sites. The scope of the term applies to an entire remediation project beginning with the remedial investigation phase, to implementation of the remedial action plan, and continuing through the O&M phases of the project. In classifying the various stages of a remediation project, the nature and quantity of all inputs and outputs associated with the project should be evaluated with respect to "green" criteria that apply to each of the phases. Inputs include personnel resources (labor); consumable materials (process feedstocks, reagents or chemical compounds) derived from virgin natural resources; and other consumable or utilizable natural resources, such as water, electrical energy, fuel, or land that may be directly consumed by or supplied to the remediation technology itself, or indirectly by the technology's associated subsystems, such as cooling water, fuel for transportation, land for a photovoltaic (solar electric) array, etc.

The goals of the application of Green Technology to environmental restoration are 1) the minimization of the consumption and the maximization of the reuse of natural resources (minerals, water, petroleum, natural gas); 2) the minimization of the production of non-reusable waste, including both hazardous and non-hazardous solid and liquid waste, greenhouse gases (H_2O vapor, CH_4, CO_2, O_3, NO_x, halocarbons) and other air contaminants; and 3) the consequent contributions these reductions make toward sustainability of the environment through the restoration or improvement of the habitat or ecosystem

For evaluating and comparing Green Technologies to traditional technologies, decision makers may consider qualitative parameters as well as quantifiable and semi-quantifiable factors. Qualitative parameters include impacts such as job creation and secondary site utilization having a community benefit (e.g. park or recreational opportunities, wetlands, or natural buffer zones), also referred to as the "service capacity" (ITRC, July 2006) of the technology. Quantifiable factors include the costs and benefits associated with the various inputs and outputs that make up the remediation technology. Semi-quantifiable factors include the time required and the effectiveness of the technology in reaching the established restoration objectives. Comparisons of the quantifiable and, where possible, semi-quantifiable costs and benefits are best made using a life-cycle analyses employing standard, present-valuation techniques.