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| **Environmental Enlightenment #201**By Ami Adini - Reissued April 30, 2017

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| This is a SHORT, LIGHT and SIMPLE newsletter. Its purpose is to rekindle in the initiated terminology they have once learned, and enlighten the uninitiated on terms they may have heard but never knew the meaning of. |
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| **Power of SimplicityThe EPA’s Citizen’s Guide to Cleanup Technologies**http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image002.png***Series 2: Bioremediation*** |

See our Newsletter, [*Environmental Enlightenment #200*](http://amiadini.com/NewsletterArchive/170419-NL200/envEnl-200.html)*,* for introduction to one highly valuable, plainly written series of Citizen’s Guides published by the EPA at <http://www.clu-in.org/products/citguide>With this issue we introduce the EPA’s “Citizen’s Guide to Bioremediation.” You can reach it through the hyperlink given below, under the blue header.http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image004.png<http://www.clu-in.org/download/Citizens/a_citizens_guide_to_bioremediation.pdf>***Bio-*** in Greek means *life.**http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image006.jpg****Remediation*** means the action of remedying something, esp. the reversal or stopping of damage to the environment. (Collins English Dictionary © HarperCollins Publishers 1991, 1994, 1998, 2000, 2003)In Latin, ***Re-***indicates a return to a previous condition, and ***mederi*** means to heal.Thus, *Bioremediation* is healing through the power of life.http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image008.jpg

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| It stands apart from technologies that use chemical substances or… |   | http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image010.jpg |

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| ...mechanical force.  |   | http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image012.jpg<http://www.cguru.info/mech.htm> |

The physical universe is an unmitigated, crass force. Its energies are programmed to collectively collapse and dissipate to frozen states of inaction. Though randomly elevated by uncontrolled explosions or upheavals, all energies will continue with their ingrained deterioration.http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image014.jpgPhoto: Sgt. Eric Rutherford, DVIDSHUB.netIn the exertion of force, be it chemical, mechanical or electric, we achieve random interactions that can be directed toward meaningful aims only through the intervention of life. An uncontrolled atomic fission will fry up a continent but through human direction can be channeled to power it up for generations.http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image016.jpgDiablo Canyon Power Plant, San Luis Obispo, CaliforniaPhoto by emdot at http://flickr.com/photos/35237093637@N01/11040625Licensed under the Creative Commons Attribution 2.0 Generic LicenseRemediation through biological means is remediation through the most intimate contact that life can make with physical elements: the metabolic process of conversion of minerals to animated microorganisms. This very nature makes the metabolic process the one most efficient in the elimination of toxic substances from soils and groundwater. Witness millions of barrels of crude oil discharged in the Mexican Gulf that never saw the light of day.Bioremediation uses *microbes.**http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image018.jpg*Microbes are very small organisms, such as bacteria, that live naturally in the environment.Certain microbes use contaminants as a source of food and energy.

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| In our field we get immediately interested in such microbes that love to feed on toxins generated from petroleum and chlorinated solvents. |   | http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image020.jpg |

Like you and me and the plants in our gardens, microbes take in nutrients and oxygen that enable them metabolize their food, and in turn they release harmless water and carbon dioxide back to the environment.http://amiadini.com/NewsletterArchive/170430-NL201/envEnl-201_clip_image022.jpgGo to <http://www.clu-in.org/download/Citizens/a_citizens_guide_to_bioremediation.pdf> for the rest.I think you will like it! |
| You can find past issues of our "Environmental Enlightenment" at [amiadini.com](http://www.amiadini.com/) Wealth of information about environmental site assessments in the real estate transactions and issues concerning assessment and cleanup of contamination in the subsurface soil and groundwater. |

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| Call me if you have any questions. There are **no obligations.**Ami Adini Environmental Services, Inc.Environmental Consultants & General Engineering ContractorsCalifornia Lic. #1009513 A B HAZ ASB**818-824-8102**; **mail@amiadini.com**[www.amiadini.com](http://amiadini.com/)Ami Adini is a veteran environmental practitioner with over 40 years of experience. He carries a Bachelor of Science degree (B.Sc.) in Mechanical Engineering including academic credits in Nuclear and Chemical Engineering and postgraduate education in these fields. His career includes design and construction of nuclear plant facilities, chemical processing plants and hazardous wastewater treatment systems. He is a former California Registered Environmental Assessor Levels I & II in the 1988-2012 registry that certified environmental professionals in the assessment and remediation of environmentally impacted land, and a Registered Environmental Professional (REP) since 1989 with the National Registry of Environmental Professionals (NREP). He is a California Business & Professions Code Qualifying Responsible Managing Officer (RMO) in the General Engineering Contractor classification with Hazardous Substance Removal and Asbestos certifications, and president of AMI ADINI ENVIRONMENTAL SERVICES, INC. (AAES), a general engineering contractor and consulting firm specializing in environmental site assessments, rehabilitation of contaminated sites and removal of environmental risks from real-estate transactions. (Contact Ami for a complete resume.) **AAES provides practical solutions to environmental concerns using the highest standards of ethics and integrity while providing its clients with maximum return on their investments.** |

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