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| **Environmental Enlightenment #189** By Ami Adini - Re-issued June 3, 2016   |  | | --- | | 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 known the meaning of. | | **Where Did That Chemical Go?**  *Acknowledgement is given to a book of this name by Ronald E. Ney, Jr., Ph.D., Van Nostrand Reinhold, New York, 1990, on which this material is based*.  To *dissipate* in the environment means to reduce to the point of disappearing.  *Dissipate* derives from Latin *dissipare* “to disperse,” from *dis-* “apart” + *supare* “to throw.”  For example…   |  |  | | --- | --- | | The dust devil in this picture will eventually collapse and dissipate. | http://amiadini.com/NewsletterArchive/110727-NL189lNL/envEnl-189_clip_image002.jpg | |  | Image credit: NASA/U. of Michigan | | The plume of smoke from the brushfire is dissipating into the surrounding air. | http://amiadini.com/NewsletterArchive/110727-NL189lNL/envEnl-189_clip_image003.jpg |   A chemical can dissipate in a variety of ways:   * It can break down to other chemicals, more toxic or less.   For example, left for natural bacteriological attack, tetrachloroethylene (aka PCE, perc and other names: a carcinogenic solvent used in dry cleaning operations and degreasing of metals) will break up to CO2 (carbon dioxide) and trichloroethylene (carcinogen), which in turn will decompose to dichloroethene and CO2, continuing to vinyl chloride (highly toxic) and CO2, and down to ethene or ethane plus CO2.   |  |  | | --- | --- | | * It can scatter.   See how the ink diffuses (scatters) in water. | http://amiadini.com/NewsletterArchive/110727-NL189lNL/envEnl-189_clip_image005.jpg | |  |  | | * It might adsorb (attach) to soil particles | http://amiadini.com/NewsletterArchive/110727-NL189lNL/envEnl-189_clip_image007.jpg | |  |  | | * It might evaporate. | http://amiadini.com/NewsletterArchive/110727-NL189lNL/evaporation.gif | |  | Image credit: Ron Kurtus & School for Champions, LLC www.school-for-champions.com | | * It could be sucked out by plants or animals. | http://amiadini.com/NewsletterArchive/110727-NL189lNL/tree_branches_and_roots_plume.png |   We measure the rate of dissipation by the *half-life* of the chemical in the environment.  *Half-life*is the time it takes for the chemical to be reduced by one-half of its original amount. The lost 50% could be in the form of breakdown products.   |  |  | | --- | --- | | For example, the time required for the body to eliminate one-half of the total amount of caffeine consumed varies widely. In healthy adults, caffeine’s half-life is approximately 4.9 hours (Ref. Wikipedia). | http://amiadini.com/NewsletterArchive/110727-NL189lNL/coffee-cup.png |   This is why breakdown products must be identified and studied in the same way the parent chemical is studied.  The dissipation of a chemical may be real, as in the breakdown of the parent chemical to its daughters.  The dissipation may not be real, as in the case when the chemical migrated from the source area elsewhere.  http://amiadini.com/NewsletterArchive/110727-NL189lNL/envEnl-189_clip_image015.jpg Image Credit: Maine Geological Survey <http://www.maine.gov/doc/nrimc/mgs/explore/water/facts/aq-04.htm>  One must always remember this: the fact that a chemical cannot be found does not mean it is not there. Good testing will establish its whereabouts.   |  |  | | --- | --- | | http://amiadini.com/NewsletterArchive/110727-NL189lNL/envEnl-189_clip_image017.gif | http://amiadini.com/NewsletterArchive/110727-NL189lNL/envEnl-189_clip_image017.gif | | | 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. |  |  | | --- | | Call me if you have any questions. There are **no obligations.**  Ami Adini Environmental Services, Inc. Environmental Consultants & General Engineering Contractors California Lic. #1009513 A B HAZ ASB **818-824-8102**; [**mail@amiadini.com**](mailto: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.** | |