

Scientific Literature Review and Contact Interviews

We conducted an extensive **on-line search** for any similar studies or pertinent information for depolluting both soils and waterways. While there have been many attempts to mitigate pollution and salts, there has been little research or trials conducted for depolluting. This is in contrast to pollution removal which, as discussed already, does not remove the problem but merely moves it to another location. Our focus will be on depollution, the actual change and disappearance of the polluting substance.

Many successful projects focussed on riparian buffer and biofiltration zones to prevent pollutants from reaching waterways which are all good. But again the pollutants remain.

The most hopeful studies were watching microorganisms 'eat' and change the pollutants over time. These studies led to an understanding of this process and could begin to recognize the most efficient organisms. However, long term analysis of the effects on the organisms themselves and the long term effects of the soil profile still need to be conducted.

Other research projects focussed on cover crops, rotational cropping, identifying what species of plants are best at assimilating toxins, and dealing with an overabundance of phosphorus in soils which is the end result of too much nitrogen most often from chemical agricultural fertilization. There is some research on heavy metal pollution, specifically resulting from mining wastes, as this is a common problem in the west and particularly in the Colorado mountains. These studies looked at the effects on soils, waterways, flora and fauna, but offered no solutions.

We are in communication with **Katya Hafich, Outreach Hydrologist, at the Colorado Water and Energy Research Centre at University of Colorado, Boulder**. She has provided us with baseline soil and water quality data and support in analysis of our findings over time with this project. The salt mapping project for Delta County is an invaluable tool for comparisons.

In December we spoke with Greg Litus of CSU Western Colorado Research Centre seeking any background research on heavy metals, salts, or chemical depollution trials or techniques in soils or water. He told us there are no studies at present to his knowledge but offered to help us again with analysis and refinement of trial techniques over time.

Please see below most of the specific links we researched:

Sare funded soil and water quality projects 1988-2003

<http://mysare.sare.org/mySARE/ProjectReport.aspx?do=viewRept&pn=LS03-182&y=2005&t=1>

Riparian Buffers

<http://mysare.sare.org/mySARE/ProjectReport.aspx?do=viewRept&pn=SW03-115&y=2007&t=1>

3 part riparian system to depollute farm waste water

<http://mysare.sare.org/mySARE/ProjectReport.aspx?do=viewRept&pn=ANC93-017&y=1996&t=1>

planting certain ornamentals to depollute - wetland biofiltration

<http://mysare.sare.org/mySARE/ProjectReport.aspx?do=viewRept&pn=LNE98-100&y=2001&t=1>

testing lead in community city garden

<http://mysare.sare.org/mySARE/ProjectReport.aspx?do=viewRept&pn=GNC08-100&y=2008&t=1>

Leads in Soil:

<http://pubs.acs.org/doi/abs/10.1021/es60136a004>

<http://www.sciencedirect.com/science/article/pii/0169772294900248>

[http://ascelibrary.org/doi/abs/10.1061/\(ASCE\)0733-9372\(1995\)121:10\(700\)](http://ascelibrary.org/doi/abs/10.1061/(ASCE)0733-9372(1995)121:10(700))

<https://dl.sciencesocieties.org/publications/jeq/abstracts/23/1/JEQ0230010050>

<http://www.sciencedirect.com/science/article/pii/S0045653507002615>

http://link.springer.com/chapter/10.1007/978-1-4615-5395-3_6#page-1

Salt:

https://books.google.com/books?hl=en&lr=&id=-AqdSMDSUIgC&oi=fnd&pg=PA315&dq=removing+salt+from+soil&ots=ESGp-5G871&sig=RZz4dHWlQ1Md93MqbvZ_Dadk8uY#v=onepage&q=removing%20salt%20from%20soil&f=false

Water/ pollution

<https://www.google.com/patents/US6200469>

Helpful site

<https://extension.org/>

organicaginfo.org

This site offers details on all organic products, CSA's nationally, stores ... **This site offered nothing pertaining to soils, contamination, lead, salt, pollutants.** The purpose of this site is to guide people to resources for Organic products. In the summary of the site on OFRF outline, it says the site focuses on research and farmer anecdotes? I was unable to find such info on this site. The sole purpose of the site is to connect the consumer with organic products and to educate the consumer on organic benefits.

Other research:

12/19 Arsenic remediation US EPA

Arsenic treatment technologies for Soil, Waste and Water

Tracking arsenic in chicken litter and keeping levels down through physical manipulation of the environment

12/19 Contacted Cornell University via e-mail

12/20 response suggestion to contact John Idowu and Rajan Ghimire at NMSU

12/20 e-mailed John Idowu and Rajan Ghimire

John Idowu e-mailed me back a series of article about removing salts from soil.

The three articles all dealt with removing salt with irrigation water, forcing or moving the salts below the root zones of the crops.

12/21 more articles, exchanged more e-mails. Mr Idowu concluded by suggesting I researched a large library looking for soil salinity articles.

12/28 Searching the Attra site for both removal of heavy metals and Soil Salinity.

This directed me to a series of articles about drought.

12/ 28 searched USDA library

An article about removing fecal coliform form the Santa Ana River

Another article about Water Quality information center Rangeland Colorado Basin tracking movement of soil salts into the water. This was just range land, not irrigated crop land.