KERN FOOD GROWERS AGAINST SEWAGE SLUDGE

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It is the position of the Kern Food Growers Against Sewage Sludge (KFGASS) that no sewage sludge, of any classification, should be applied over any usable groundwater.

Current United States Environmental Protection Agency (USEPA) and California State Water Resources Control Board (CASWRCB) regulations, which govern the land application of sewage sludge, are not protective of human health, agricultural productivity, and ecological health or water resources. The EPA program, which the SWRCB has used as the foundation for the proposed General Order is terribly flawed. As a result the 503 regulations are fraught with risk, as has been determined in the course of independent evaluations by the Office of the Inspector General and the National Academy of Sciences.

On April 3, 2002 the EPA Office of the Inspector General (OIG) released its report on EPA's sewage sludge rule. It stated that "EPA cannot assure the public that current land application practices (of sewage sludge) are protective of human health and the environment." Among the major deficiencies and concerns raised by the EPA OIG were the following:

- There are "uncertainties" in the science underlying the risk assessment previously conducted on the sludge rule, "related to human health, human exposure pathways, plant toxicity and uptake, effects on wildlife and ground water impacts."

- The sludge rule was based on "limited documentation" regarding the "long term behavior of metals in sludge."

- Methods used for determining the pathogen standards in sludge were "questionable."

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The California State Water Resources Control Board has done little to improve USEPA regulations, stating in the Final Environmental Impact Report (FEIR) on the General Order (regulating sludge applications in California), that the part 503 regulations are based in part on a "willingness to accept some health risk to support the reuse of sludge." Unfortunately, the acceptance of "some health risk" by the USEPA and by extension, the SWRCB, comes at the expense of the communities where sewage sludge is applied. This begs the question, what benefit warrants such a risk?

It should be noted that the USEPA lowered the health risk standard from the originally proposed conventional limit of 1 in 1,000,000 to 1 in 10,000, a hundred fold decrease in the safety factor.

Personnel at the Fresno office of the Regional Water Quality Control Board stated that sludge generators are rarely inspected more than once a year and sludge is almost never analyzed by them. In November 1998, the California State Auditor issued a report entitled "Lahontan Regional Water Quality Control Board: Has Not Accomplished All of its Regulatory Work and Has Not Always Vigorously Acted Against Water Quality Violators." Comments in the report include the following:

- "The Lahontan RWQCB does not fulfill all of its regulatory responsibilities"
- "Lahontan does not sufficiently monitor waste discharges"
- "Lahontan does not complete all compliance inspections"
- "Lahontan does not ensure that dischargers submit monitoring reports"
- "Lahontan has not always followed up on violations of permit requirements with enforcement actions or issued them promptly"

There is no independent testing, monitoring or effective oversight of sewage sludge or generators by either the Federal or State government. The RWQCB are not able to meet the requirements of enforcing federal or state sludge regulations.

Sewage sludge, also referred to as biosolids by promoters, are a complex mixture that can contain pollutants from household, commercial and industrial waste waters with organic contaminants (such as pharmaceuticals), inorganic contaminants (metals and trace elements) and pathogens (bacteria, viruses, fungi and parasites). In July of 2002, the National Research Council issued a report and noted the following:

- There is "a lack of exposure and health information on exposed populations."
- There is a "reliance on outdated risk-assessment methods."
- There is "reliance on outdated characterization of sewage sludges."

- Programs are inadequate to ensure compliance with regulation of sewage sludge.

- EPA's sewage sludge program lacks adequate resources.

- "Since 1993, new chemicals of concern have been identified, such as organic compounds used as flame retardants (i.e., brominated diphenyl ethers), pharmaceuticals and odorants. Chemicals eliminated in earlier selection processes because of data gaps might now be re-evaluated in light of new data."

Even EPA's own scientists question the science used by that agency to support the disposal of sewage sludge on farmland. The term "sludge magic" was the name given to the theory that clay layers would indefinitely retain the toxic chemicals leached from applied sewage sludge. Of course, this theory is wrong and dangerous.

According to the August 5, 2002 issue of U.S. News and World Report, EPA never performed the studies urged by its own scientists to investigate the effects of sludge on public health and the environment. Conflicts of interest may be a factor. Dr. Al Rubin, former chief of EPA's sludge management branch, oversaw the development of EPA's 503 regulations. In 1994, Rubin went on sabbatical at half salary to work for the Water Environment Federation, formerly named the Federation of Sewage Works Association, a lobby organization. He the returned to EPA to regulate the very industry which had just employed him.

If the PEIR is an objective evaluation of all options and concerns, why were the reports from the Office of the Inspector General or the report by The National Research Council, issued in July of 2002 excluded from the PEIR? Throughout the EIR, sweeping, unqualified statements are made as if they were fact, even though they are without documentation or support. It is readily apparent that the authors of this document have already determined that the land application of sewage sludge is beneficial as is repeatedly asserted through out the document. There is only a feeble attempt to evaluate the risks and costs of sludge. An honest attempt was not made to conduct a scientifically based risk-benefit analysis.

Included, please find the testimony of Dr. David L. Lewis which was given before the Committee on Resources and Subcommittee on Energy and Minerals of the House Of Representatives on February 4, 2004. Dr. Lewis was recently fired from U.S EPA, where he had worked as scientist. He has won a whistleblower suit against EPA. In his testimony of Feb.4, Dr. Lewis described the politicization of the peer-review process both inside and outside of the U.S EPA. He described the whole process as "being nothing more than a sham" The efforts to discredit Dr. Lewis in order to perpetuate the cheap disposal of dangerous waste on farmland can only be described as disgusting. By relying so heavily, without question on EPA and obviously with bias here in California the SWRCB has failed to provide a sound scientific framework to safely dispose of sludge.

Class A EQ sludge should have a much lower pathogen level than class B, though there are legitimate concerns about the adequacy of the very limited testing which is required, and the potential for pathogen re-growth. EQ sludges must meet certain concentration limits (no more than x parts per million) for only nine regulated heavy

metals and vector reduction requirements. Class A EQ sludge may still have the same endotoxins, nutrients and chemicals as class B.

Even more troublesome are the unknown health and environmental effects from the thousands of pollutants in sewage sludge for which there are no data and therefore no regulation. A glaring example is the possible presence and hazards associated with radioactive materials in sewage sludge. Radioactive materials including (uranium, tritium and radium) can come from many sources, including natural and medical, concentrating in sewage sludge. There are no required tests for salinity, antimony, beryllium, barium, boron, silver and thallium. Some of these, such as beryllium, barium, and boron are mobile, as is cadmium, which is regulated (inadequately). An additional defect is that, the chemical state of heavy metals has not been considered. The ionic state or electrical charge can have a profound effect on the behavior and toxicity of a metal. For instance, chromium ? and IV are much less mobile in the soil than chromium VI which has contaminated ground water from man made sources.

Sludge contains heavy metals which are organically complexed. This makes the metals much more mobile than metals that are normally found in nature or whatever small amounts may be found in fertilizers. Field research strongly indicates that some sites, which had previously been treated with sewage sludge, have lost up to half of some sludge applied metals, indicating a threat to groundwater.

EPA's groundwater contamination model does not appear to be based on actual field experience in irrigated areas in the western U.S. This model predicted that it would take a blue dye three years to travel six feet into the soil. In reality, the blue dye traveled six feet in a half hour in field test of that model.

The EPA does not regulate application rates of A EQ sludge. However, Kern County does mandate application rates based on agronomic needs. This is defined as applying only as much sludge as is needed to supply the nitrogen needs of the crop. Calculations using analyses from Los Angeles City's Hyperion Treatment Plant show that sludge will deposit, in some cases, several hundred or even a thousand times or more heavy metals than if a legitimate chemical fertilizer had been used to supply the same amount of nitrogen to grow the crop. Furthermore, there is no incentive not to over apply sludge when it is provided to growers free or growers are paid to take sludge, as is often the case. This practice was not addressed in the PEIR and is a significant contributor to environmental degradation.

Soil scientist Dr. Murray McBride of Cornell University wrote that "the long-term consequences of the application of metal-laden sewage sludges at the loadings permitted by the USEPA-503 regulations are still unknown." Dr. Stanford Tackett of Indiana University described sludge as being "closer to the definition of a toxic waste than it is a fertilizer."

Regulations change. Beginning January 23, 2006, federal public drinking water standards for arsenic will drop from 50 ppb (parts per billion) to 10 ppb. The state of California is considering adopting an even lower drinking water standard that could be 5 ppb or less. In light of this fact, is it logical to load up the soil above our aquifers with more arsenic? The EPA Drinking Water Division has recognized the dangers of lead to

young children and has officially lowered the lead allowed in drinking water to a goal of zero. In addition, even more stringent standards are required of that water which is extracted from Kern County groundwater banking projects and then exported south for blending with lower quality water.

There remain questions about pathogen kill, even in A EQ. The presence of warmth and moisture present an opportunity for the regrowth of diseases. Dr. Hailu Kinde, DVM, MPVM, wrote to the Kern County Board of Supervisors in September 1999 that "the existence of potential health hazards may not necessarily be reflected by indicator organism densities." According to Straub, Pepper and Gerba's 1993 paper, "Hazards from Pathogenic Microorganisms in Land-Disposed Sewages Sludge," "significant numbers of pathogens exist in sludge even after stabilization and treatment. If these pathogens can remain viable for extended periods of time, groundwater sources beneath sludge disposal and land application sites may become contaminated. Pathogens may not be significantly inactivated or removed by transport through the vadose zone. Once in groundwater, they may travel significant distances from the site. For viruses and parasites, the infectious dose is low… there could be a significant risk of infection on an annual and life time basis." Straub et al stated that there are more than 120 viruses which are excreted by humans and are known to concentrate in sludge. Certainly domestic animals can carry a relatively small percentage of the total pathogens capable of infecting humans. However, the animal industry is an essential industry. They feed people. The correct disposal of sludge is essential. Disposing of sludge where animals may acquire the pathogens therein and begin the disease cycle again is not an essential activity. The most elementary of sound hygienic principles dictate that the cycle of disease and potential introduction of diseases be eliminated. Concentrating disease-laden waste at a POTW and redistributing those diseases back into the environment is a violation of that principle. It is sewage sludge which may well be the source of introduction of pathogens into animal populations, which then may vector diseases full circle to humans again. Infection of wildlife populations by human activities has been well documented by Dr. Rob Atwill (DVM, MPVM, PhD Environmental Animal Health Specialist) from U.C. Davis School of Veterinary Medicine. This should be of great concern when considering that some wildlife species, such as the yellow-bellied marmot, can have a Cryptosporidium parvum loading rate which is 30 times greater than cattle. If the marmot or other wildlife species, which associate with water, acquire C. parvum from sludge, the potential for contaminating surface water is increased. The statement that the animal industry is not regulated (14-33) is absolutely false. The authors of this document would do well to utilize experts on the subject such as Dr. Deanne Meyer, PhD., Animal Waste Management Specialist from the University of California at Davis. She has an active outreach program which includes many training courses for the dairy industry in which she educates people about the many regulations affecting the animal industry, especially water which has been exposed to dairy waste. The dairy industry is expected to closely follow regulations.

Surfactants are a major component of sludge. Surfactants tend to actively desorb or release toxins such as trichlorobenzene and other organic pollutants from the soil thus putting groundwater at risk ("Effects of Surfactants on Sludge Dewatering and Pollutant Fate," Water Resources Center, University of Delaware, August 1, 1993).

The disposal of nearly 650 toxic chemicals must be reported to EPA under the Toxics Release Inventory. In 2000, more than 27,000,000 pounds of toxics were disposed of in California's publicly owned treatment works (POTW's). That is equal to more than 560 truckloads of toxic chemicals. The majority of these chemicals end up concentrated in the sewage sludge end-product. Some of the chemicals listed which are of particular concern, due to their potential to contaminate ground water, include creosote, ethylene glycol, methyl ethyl ketone, MTBE (Methy tert-butyl ether), phenol, sodium nitrite, sulfuric acid, tetrachloroethylene and more. The TRI website is at www.epa.gov.tri.

Three years after the adoption of Kern County's ordinance, the best recommendation for the tolerance for PCB in sludge has dropped from 50 parts per million (Kern's current threshold) to 1 or 10 parts per billion, a 5,000 fold difference.

Not all of the chemicals which may be considered dangerous, now or in the future, are currently listed as such in EPA's Toxics Release Inventory. Rather than waiting for more complete information regarding the behavior, fate and risk of the many other chemicals found in sludge, standards were promulgated only "for those pollutants and use or disposal practices for which sufficient information exists." In other words there are no protections in place for those chemicals of which little is known and yet USEPA and CASWRCB encourage society to assume these unknown risks.

A landmark study by the American Society of Civil Engineers clearly identified a significant number of toxic organic chemicals that are typically found in sewage sludge including PCBs, pesticides and many chlorinated compounds. Dr. Donald Lisk from Cornell University's College of Agriculture and Life Sciences estimates that typically 100-200 companies will flush their waste into a single treatment plant and that literally thousands of chemicals may be present in a single sludge sample. Only a handful of these chemicals are tested for in even the best monitoring programs. In addition, newly formed toxic substances are created as waste products break down in sludge. Dr. Lisk has stated that, "the concept of 'well engineered' sludge is a myth. There is no sound scientific basis for limiting levels of potential toxicants in sludge since we do not know the identity of most of them. Even if both of these problems didn't exist, it is extremely unlikely that any feasible monitoring and enforcement program could ensure that application regulations are met."

"Little is known about the environmental occurrence of many chemicals we use to maintain the quality of our daily lives," said Robert Hirsh, associate director for water at the U.S. Geological Survey. According to a fact sheet prepared by the Sanitation Districts for Los Angeles County, "many pharmaceuticals alter dramatically as they break down and the amalgam of substance mixed in the waste steam makes it nearly impossible to filter out certain substances, especially at such minute leves" (Western Water, May/January 2002). European scientists have determined that the source of drugs in European drinking water is from human waste. Metabolites originating from medical substances have been measured in groundwater. A number of pharmaceuticals classified as non-biodegradable and as being persistent include (but not limited to), Amitriptyline (antidepressant), Chlorhexidrine (disinfectant), Codeine phosphate (opioid analgesic), Erythromycin (antibacterial), Naproxen (anti-inflammatory), Tetracycline (antibacterial),

many cortisone compounds and testosterone. Futhermore, there is mounting evidence that many synthetic compounds can disrupt hormonal systems. These 'endocrine disrupters' include DDT, some PCB cogeners and commonly used phthalates (which are compounds in plastics) and bisphenol A. Several of the polychlorinated naphthalenes (PCNs) have dioxin like activity. For many compounds, physico-chemical data sets are at best limited and at worst not available. (Assesment of Organic Contaminant Fate In Waste Water Treatment Plants I: Selected Compounds and Physiochemical Properties by R.E. Alcock, A. Sweetman and K.C. Jones, Chemosphere, 1999, Vol. 38). Additional mobile compounds which are predicted to be a threat to groundwater are chloroanilines, mononitrophenols, dinitrotoluene, and bis (2-chloroethoxy) methane. (R. Duarte-Davidson, et.al, The Science of the Total Environment, Vol. 185 1996). As previously mentioned, certain chemicals in sludge are endocrine disrupters or hormone mimicking compounds. A paper published by S.F. Arnold, et al in Science Vol. 272 on June 7, 1996 stated that some of the estrogenic compounds occur as mixtures in the environment (sludge) and their combined action has not been well studied. A combination of any two of these chemicals produced a synergistic increase in activity in screening tests. The mixture was 160 to 1600 times more potent than the single individual chemicals alone. PCB's of which L.A. County reported receiving 223 pounds in 2000, are one of the compounds detailed as causing this effect.

Attached, please find the abstract entitled "Organic Wastewater Contaminants in Biosolids and Biosolid-Derived Products" written by several members of the U.S Geological Survey. It was stated that the presence and environmental fate of organic wastewater contaminants (OWCs) such as pharmaceuticals, personal care products, endocrine disruptors, industrial chemicals and pesticides has not been evaluated, particularly as a source to surface or groundwater. More than 35 OWCs were identified and quantified in sewage sludge. Future research will focus on the fate and transport of OWCs in the soil "and to evaluate the potential for OWCs from sludge to reach groundwater"

The issue of metabolites, breakdown products and interactions with other chemicals and the environment has not been addressed by the USEPA or the CASWRCB. A recent article in the Journal of Photochemistry and Photobiology A 2003, documents that triclosan, an antimicrobial, made by the ton and added to hand soaps, clothing and other items, which ends up in sewage, can degrade into a dioxin when exposed to sunshine in the presence of water. The U.S.G.S. found triclosan to be a widespread water pollutant. There is a potential greater danger in that triclosan may acquire a chloride atom, as much water is chlorinated, and form more toxic dioxin species. Kristopher McNeil, a chemist and coauthor of the paper said "finding this degradation product from triclosan should be a warning to look for what happens down stream to other common compounds whose basic structure suggests that they could be precursors to dioxin or other toxic chemicals." In addition, the current recommended dioxin tolerance of 300 parts per trillion is now regarded as too high. Kern County's dioxin tolerance is 50 parts per million.

What drives the need to use farms as a disposal site for sewage sludge? The EPA and SWRCB have chosen to ignore glaring risks for the small benefit of providing a least cost disposal option for POTWs. This PEIR claims other means of disposal are limited and expensive. Little effort has been devoted to aggressively finding other options.

Attached, please find the newspaper article in which H.M. Holloway in Lost Hills is in the permitting process to fill old gypsum mines with sewage sludge. This is a low cost alternative which presents fewer risks than most other options. Certainly there must be additional options like this available.

We have repeatedly asked a question of EPA that is yet to be answered. If sewage sludge is no longer safe enough to dump in the ocean as it once was, why is it's disposal encouraged on our farmland, and over our groundwater? The television news program "60 Minutes" reported the role of USEPA in the contamination of Glenville's groundwater by MTBE. The pollution of Glenville's groundwater is small compared to the below-ground plumes of MTBE which currently threaten some of Bakersfield's drinking water. In spite of ample evidence that MTBE would contaminate groundwater, EPA mandated it's use as a replacement for lead in gasoline. Only now is the extent of the harm being realized that has been done to the drinking water supplies by MTBE in the United States. Some of the very same individuals at EPA have been involved in both the MTBE debacle and sewage sludge disposal program. With knowledge and forethought, USEPA has embarked on a dangerously cavalier and irresponsible policy which is certain to ultimately degrade this nation's water supplies on a much larger scale than any terrorist action ever could. In view of the lack of accountability by USEPA or the CASWRCB, it has become incumbent upon individual counties to assume responsibility for the protection of our resources (as is allowed by the 503 Rule). There is ample evidence that the contaminants in sewage sludge will very likely pollute groundwater. There is no evidence that EPA's 503 Sludge Rule or the SWRCB regulations will protect our groundwater from degradation by sewage sludge. Nor is there any benefit from the land application of sewage sludge which justifies these risks to our groundwater and other resources. Therefore, simple logic and prudence would dictate that no sewage sludge applications of any kind should be made over any usable groundwater. To reiterate, the EPA Office of the Inspector General 2002 report, the "EPA cannot assure the public that current land application practices (of sewage sludge) are protective of human health and the environment."

Respectfully,

Kern Food Growers Against Sewage Sludge