



# CALIFORNIA ASSOCIATION of SANITATION AGENCIES

1215 K Street, Suite 2290, Sacramento, CA 95814 PH: (916) 446-0388 – FX: (916) 231-2141 [www.casaweb.org](http://www.casaweb.org)

To: Interested Parties

From: Greg Kester, Biosolids Program Manager

Subject: Rebuttal to Center for Food Safety/RILES petition to San Francisco

**Overall general observation:** The thrust of the Center for Food Safety (CFS) argument is that biosolids contain a plethora of constituents and claims that their presence renders the biosolids as toxic. This is a fundamentally flawed view for two primary reasons. First, one must consider the constituents in a holistic sense, and secondly one must be able to estimate the risk posed by their presence. In a holistic sense, the constituent concentration is miniscule in biosolids compared to concentrations that are present in the intended purpose of the constituent. For instance, flame retardant PBDE's are ubiquitous in the environment. Every seat cushion we sit on contains far higher concentrations than are found in biosolids and these are released to our immediate environment for inhalation upon each sitting. They also serve their intended purpose of fire suppression which will save far more lives than are endangered by secondary exposures. Triclocarban is present at 3% concentrations in typical anti-bacterial soap that we use on our face, hands, and bodies. That is equivalent to 30,000 parts per million. Vitamins we take daily such as Rite Aid Centra contain more than the maximum concentration of zinc and molybdenum that are allowed in biosolids. The more critical element that must be considered is what the presence of these trace constituents in biosolids means in terms of effects. To make that assessment you need dose and toxicity, as well as mechanisms of transport, exposure, and duration of exposure. One of the true benefits of biosolids is that its high level of organic matter, iron and aluminum and manganese oxides means that constituents are generally bound very tightly to the biosolids matrix and do not become bioavailable in worrisome amounts.

It should also be remembered that wastewater treatment, including sludge handling, are dynamic living biological systems. If toxic elements were being discharged to the wastewater system at harmful levels, the system would have an "upset"; that is, the microorganisms which drive the treatment would not be able to survive and would die off. That does not happen and in well designed and operated treatment plants the living environment for the microorganisms is carefully managed to maximize their well being.

## Specific Comments:

**1. COMMENT: Page 2 last paragraph – The regulatory scheme does not prevent these substances from entering sewage sludge and the treatment and composting process do not remove them.**

**RESPONSE:** EPA instituted pretreatment regulations on industrial discharges to sewer systems in the 1980's. Local limits are established by the receiving wastewater treatment plant which severely restricts that which can be discharged. This applies to heavy metals and other priority pollutants. Since the implementation of these regulations, the metal and other constituent concentrations have declined in biosolids to essentially the lowest technologically achievable levels. The concentrations reached the lowest achievable levels around the mid 1990's and have held steady ever since then. Pathogen control requirements are technology based in Part 503 and require time and temperature and/or other process control to either eliminate or significantly reduce the pathogen concentrations. The compost requirements most certainly do kill pathogenic organisms.

**2. COMMENT: Page 3 first paragraph – There is no scientific consensus as to its safety and no public consensus regarding a regulatory scheme that would protect public health and the environment from the reasonably anticipated adverse effects of land applying sludge derived products.**

There has been scientific consensus across the nation among university researchers and regulatory staff for decades regarding the benefits of biosolids application to land. A myriad of researchers across the nation have been documenting those benefits through demonstration and field-scale research since the 1960's. The list becomes even longer when including sludge treatment technology that dates to the early part of last century. Those who make allegations against it within the university community can be counted on one hand and none have been leaders in actually conducting relevant biosolids fate and transport research. It requires little effort to make allegations and present what-if scenarios and require proponents to essentially prove a negative, but it also provides no answers to the compelling question of how to effectively manage what will be an ever increasing by-product of wastewater treatment. Extensive research has been done and consistently and virtually unanimously supports the benefits and safety of biosolids recycling to soil.

**3. COMMENT: Page 3 fourth paragraph – Sewage in San Francisco is a combination of industrial, commercial, hospital, and household wastewater...**

San Francisco has virtually no industrial facilities within its borders or sewer service area. Even if it did, as with any non-domestic discharger, local limits are imposed as appropriate and pretreatment standards would apply to any captured industry for a suite of priority pollutants to limit what is sent to the wastewater plants.

**4. COMMENT: Page 5 second to last paragraph – However, sewage sludge contains a diverse collection of wastewater contaminants of emerging and known toxicological concern not addressed whatsoever by the Part 503 Rule.**

While it is true that only 9 pollutants are regulated by Part 503, more than 400 pollutants were reviewed during the development of the regulations. In order to responsibly regulate a pollutant certain information must be available in order to conduct a risk

assessment. Such information includes toxicity, fate and transport (from within the biosolids matrix), reasonable routes of exposure, and the dose to which the subject would be exposed. For more than 200 pollutants, a hazard quotient (HQ) was calculated which is a measure for potential adverse effects to public health or the environment from high end exposures. Some 25 pollutants had a HQ of greater than one, which called for a comprehensive risk assessment. Fourteen pathways of exposure were evaluated with numerous conservative assumptions built in through which it was ensured that all *reasonably anticipated adverse effects* were captured. Ten pollutants were determined to be necessary to regulate for land application (later reduced to nine).

The Clean Water Act (CWA) as mandated by Congress does not allow EPA to regulate based on a non-scientific basis such as the Precautionary Principle. The CWA also requires EPA to conduct a biennial review of “new or emerging” pollutants to determine whether the regulations need to be modified to capture them. Chlorinated Dioxins and dioxin like compounds were fully evaluated, an enhanced risk assessment was conducted for them and EPA concluded risk was so minimal as to not require any regulation for dioxins in biosolids. Other constituents have likewise been determined not to pose a risk and thus have not been regulated. Work is ongoing for nine pollutants identified in one of the reviews and other potential pollutants are currently being evaluated due to the Targeted National Sewage Sludge Survey released by EPA in January 2009. The overriding point is that mere presence of a substance does not equate to risk or adverse effect. In fact, the wastewater treatment is functioning as designed when removing pollutants from water and concentrating them in the sludge. Biosolids are an amazingly complex matrix with tremendous binding properties which render most pollutants immobile.

**5. COMMENT: Page 5 last paragraph – A recent federal court decision indicates not only that EPA’s regulations are inadequate, but that EPA actively hid and subverted critical information concerning the dangers of sewage sludge.**

Please see CASA document (attached at the end of this document) summarizing this case and refuting these findings.

**6. COMMENT: Page 6 second and third paragraph – Cites two reports by the Office of the Inspector General which both criticized EPA’s lack of resources devoted to the biosolids program. It is also claimed that “EPA cannot assure the public that current land application practices are protective of human health and the environment.”**

No one would likely argue that EPA devotes enough resources to the biosolids program. However two points are relevant in this argument. One is that EPA has always defended their scant resource commitment by stating that biosolids use is **not** deemed a likely source of public health or environmental harm. On the grand scale of issues with which EPA must deal to protect the public and the environment, biosolids is given consistently low priority because of this. Secondly, EPA Region 9 based in San Francisco and in which California is included does have a dedicated biosolids program

with an exceptionally committed coordinator. The Coordinator does review annual reports, responds to inquiries, makes regular inspections, and understands the issues. Region 9 can, in fact, assure the public that current land application practices are protective of human health and the environment.

**7. COMMENT: Page 7 second to last paragraph – “...it is inevitable that metals will be released from sludge and expose humans to their harmful effects.”**

Virtually all credible scientific research over many decades has concluded that metals will not be released in harmful amounts from biosolids. In fact biosolids have been used to bio-remediate soils contaminated with lead, zinc, cadmium, radium, and other metals. The petition claims that the US has the most “lenient” standards for metals in biosolids in the world. But, as stated earlier, due to the success of the pretreatment program the vast majority of biosolids in the US and certainly in California and San Francisco have metals concentrations far below those standards and are really at the best achievable technology limit. San Francisco biosolids meets all limits imposed by Denmark which are likely the most stringent in Europe.

The potato study paper cited in the Petition did not find increased levels of lead in potatoes as claimed. Furthermore, the analytical method used for detection of metals was the ICP-AES, but with no internal standard and with no Standard Reference Sample. Both render any analysis for cadmium or lead invalid, especially at the low concentrations present in the potato samples. Also since the biosolids were highly alkaline and raised the soil pH, it would be nearly impossible to cause a significant increase in cadmium or lead in the crops. Further, the referenced paper shows that biosolids application did not significantly increase crop cadmium or lead. The argument put forth on these and the subsequent pages of the petition is a restatement of the so called “time bomb theory” of metals release in soils. This theory has been thoroughly debunked a number of times by the top researchers in the field. In short, the metals form long term incredibly strong bonds within the biosolids matrix. Due to oxides and other properties of the biosolids matrix, the bonds do not diminish over time and remain strong even after the organic matter has degraded. A soon to be published paper (Chaney, et. al., J. Environ. Qual 39:1-13; March-April 2010) directly refutes the claims of the Time Bomb Theory by measurement of cadmium uptake by lettuce grown on long-term biosolids amended soils, and found historic biosolids application significantly reduced cadmium accumulation by lettuce compared to the control soil. Note this paper is on the CASA website [www.casaweb.org](http://www.casaweb.org).



# CALIFORNIA ASSOCIATION of SANITATION AGENCIES

1215 K Street, Suite 2290 • Sacramento, CA 95814 • TEL: (916) 446-0388 – FAX: (916) 231-2141 • [www.casaweb.org](http://www.casaweb.org)

April 7, 2008

To: CASA Members  
Other Interested Stakeholders

From: Greg Kester, Biosolids Program Manager

Subject: Recent Federal Court Decision in Georgia regarding biosolids

A significant decision was rendered on February 25, 2008 in the United States District Court for the Southern District of Georgia in *McElmurrays v. U.S. Department of Agriculture (USDA)*. This decision overturned earlier administrative determinations by USDA and awards a “prevented planting” subsidy to the McElmurrays due to a claim of soil contamination due to biosolids applications. Anti-biosolids activists, and personal injury lawyers, are using this case to bolster their claims that land application of biosolids is not safe. CASA and others who have investigated these allegations believe the data does not support the claim and that the judge incorrectly interpreted the evidence.

The City of Augusta land applied biosolids to the McElmurray farm from 1979 – 1990. It is acknowledged that this was not a model program and numerous management and recordkeeping errors were made. **However**, the compelling evidence in this case strongly supports the USDA position against a prevented planting subsidy and shows no evidence of soil contamination. Based on the administrative record and information from EPA, and others, CASA has joined NACWA, WEF, and other stakeholders in urging USDA, EPA, and DOJ to appeal this decision. An Associated Press article uncritically accepted the court’s view on this issue, so this case has garnered national negative attention, which if left unchallenged, can adversely affect the viability of land application recycling programs.

The following points attempt to offer perspective and insight into the case. CASA members, when confronted with statements that this federal court decision supports the claim that land application contaminates the soil, can vigorously refute that claim.

- This latest decision comes out of ten years of litigation by the McElmurrays, their neighbor farmers the Boyces, and their attorneys to secure a financial award based on their claims that their land was contaminated and related allegations. Numerous lawsuits related to this claim have been filed against the City of Augusta, the University of Georgia (UGA), and unfortunately, individuals within EPA and UGA. No judge or jury prior to this decision has made any finding of fact that the biosolids contaminated the land or killed cattle, as alleged. Augusta settled one of the lawsuits, and a state court jury awarded some damages against Augusta for breach of contract in one lawsuit without making any finding of contamination or harm to cattle.

- The land application at issue in these cases occurred from 1979 – 1990. Since all parties agree that there was poor recordkeeping by the City of Augusta which renders the data quality questionable, the best way to assess the situation is via soil sampling and testing of the cattle and their forage. The heart of the debate should be over the soil sampling results.
- Williams Environmental Services, Brown and Caldwell Environmental Engineering, and Auburn University, on behalf of the City of Augusta; and Newfields Inc. and others, on behalf of the McElmurrays, performed soil sampling on the McElmurray farm. The results of all data submitted were reviewed by Bob Brobst, USEPA Region 8 biosolids coordinator, who was deemed the most qualified at EPA to conduct the review.
- In a November 10, 2003 letter to Mr. Tommy Weldon, USDA's Agricultural Program Specialist, Mr. Brobst goes into great detail to explain the results of his review. In that review he discounts most of the data provided by the Plaintiffs for a variety of data quality reasons. That which he does accept from the plaintiffs is consistent with the defendant's findings and shows no contamination or problem. The Williams et al, data is deemed wholly credible by Mr. Brobst as meeting strict QA/QS requirements. A complete field by field analysis illustrates metal levels in the background range and shows no contamination.
- There is a dispute over which evidence and which expert is credible. While the lower courts and USDA determined that USEPA's review was credible, the latest court decision favored the Plaintiff's hired experts and did not address the significant data in the record disproving the allegations.
- The February court decision states that Mr. Brobst "...did not consider (or find any particular fault with) the information provided by the McElmurrays....". This is inaccurate. Mr. Brobst's November 10, 2003 letter to USDA plainly demonstrates the limitations on the Plaintiff's data and supports USDA's decision.
- The February decision also made several statements that simply contradict accepted biosolids research findings and biosolids management principles. These include:
  - Blame is assessed to the City of Augusta for recommending an elevation of pH in the soil. This was the correct advice for aluminum mitigation. Plaintiffs' claimed aluminum toxicity as reason for poor crop productivity in 1990. For aluminum to have phytotoxic effects the pH would need to be in the 3-4 range. This is a dangerously low pH which would yield poor crop production in any event.
  - Plaintiff's expert claims the top 8 inches of soil is least likely to retain metals and that metals would leach below the root zone. Numerous peer reviewed research studies demonstrate that there is long-term retention in the upper horizon and metals are not prone to leaching. The Plaintiff's expert has experience with Superfund sites which may explain his unfamiliarity, and incorrect assumptions, with biosolids research.
  - General claims are made that certain constituents such as antimony, arsenic, chlordane, selenium, and thallium exceeded "limits". It is unclear what limits

would have applied. None of these constituents were regulated under 40 CFR part 257. It is also unclear whether soil or source limits were supposedly exceeded.

- Assertions are made that soil is “contaminated”, but no standard or regulation is cited to support those claims.
- A claim is made that sewage sludge had a PCB concentration of 5000 ppm! This should have been immediately flagged as an outlier and further reviewed by the lab. Presumably it is an analytical error or a unit conversion problem. Levels such as this would be exceedingly suspect. If the Court believed this result it would seem logical to have informed the Toxic Substance Control Act branch of EPA, under whose purview this would fall.
- In the soil analytical results submitted on behalf of the McElmurray’s, six different analytical methods were utilized. This made comparison of results impossible. It should be noted however that a number of samples were analyzed using ASA Total rather than EPA Method 3050. The ASA method destroys all silica and soil matter and measures total metals, including those that under natural conditions would be permanently bound in the soil matrix. Method 3050 is the EPA approved method for biosolids because it is not artificially destructive and only measures the maximum bio-available metal.
- Former USEPA Assistant Administrator for Water Tracy Mehan provided an eloquent description of the agency’s supportive views regarding biosolids application in a December 24, 2003 letter denying a request to impose a moratorium on the practice. In that letter this and a similar other Georgia case were referenced and repudiated. The Court dismisses that letter as irrelevant because it did not directly speak to this case. The basis of the Mr. Mehan’s response included many research products including the expert opinion of his staff who had previously investigated these claims.
- The opinion recycles certain old allegations that EPA repressed or took improper punitive actions regarding Agency personnel. EPA and the biosolids community at large has rejected these allegations and numerous other tribunals have credited the efforts expended in developing the part 503 program. It is not clear that USDA or EPA were given an opportunity to defend against these claims before the court made it a part of its opinion.

Please feel free to contact me for any further information or additional information on this issue.