

Contaminated Soils Forum

Policy Group

Reuse Subcommittee

Issues Paper

9/21/98

Contaminated Soils Forum Policy Group/Reuse Subcommittee

Issues Paper
9/21/98

Contents

A. Introduction

B. Areas where there is clear statutory authority to consider public health impacts in allowing recycling or reuse

1. Recovered Screened Material
2. Combustor Ash Residue
3. Solid Waste Compost
4. Dredged Spoil
5. Biosolids

C. Areas where authority to consider public health impacts in recycling or reuse is not clear but is needed

1. Soil Treatment Facilities
2. Industrial Byproducts
3. Recovered Materials
4. Manufactured Soils
5. Stormwater Sediments
6. Street Sweepings
7. Drinking water treatment sludges
8. Phosphogypsum
9. Fossil Fuel Combustion Ash

D. Areas where FDEP has no authority, but where there are concerns about current policies or regulations governing use or land application which could result in soil contamination

1. Arsenic Based Herbicides Used On Golf Courses
2. Use of KO-61 EAF Dust in Fertilizer
3. CCA Treated Lumber
4. Lead Shot Used in Skeet Ranges

Contaminated Soils Forum

Policy Group/Reuse Subcommittee

Issues Paper
9/21/98

A. Introduction

In the past decade, recycling has grown phenomenally in Florida. The municipal solid waste (MSW) recycling rate has grown from 4% to 40% from 1988 to 1996, an increase from 1 million tons recovered in 1988, to 10 million tons in 1996. There are now nearly 300 curbside recycling programs in Florida, serving three million households, which routinely collect glass, steel cans, aluminum cans, plastic bottles, newspaper, corrugated containers, office paper and other materials. There are also increasing numbers of commercial and institutional recycling efforts. Moreover, there has been an expanding interest in recycling some of the larger and more difficult to manage fractions of the solid waste stream, including: construction and demolition debris, ash residue from combustion of solid waste, yard trash and other organic material. And, there is growing interest in the industrial sector in reuse of materials derived from industrial processes including industrial byproducts of varying kinds, and wastes such as water treatment sludges and phosphogypsum,

Recycling of these materials would substantially enhance the state's recycling efforts and is in the State's long term interest. However, there are a number of issues concerning reuse of these materials, particularly when applied to the land. Solid waste can contain pesticides, solvents, heavy metals and other contaminants. The materials derived from the waste may contain these contaminants and reuse may pose a threat to human health and the environment. The Division of Waste Management's current approach, in those cases where specific rule standards do not apply, is to recommend the use of the Soil Cleanup Target Levels (SCTLs) for the initial evaluation of risk from reuse of materials derived from solid waste. If the material meets the residential numbers, it will generally be considered safe to be used anywhere, except possibly in or near surface waters. If it meets the industrial numbers, it will generally be considered safe to be used in industrial areas, with appropriate engineering or institutional controls. Independent risk assessments may also be conducted to determine safe uses of these materials.

The following paper identifies the key issues involved in the reuse of materials derived from solid waste. The issues are grouped in three categories, depending upon the current level of statutory and regulatory authority to set standards for reuse, in a manner which "protects public health and the environment". Chapter 403, Florida Statutes, gives FDEP clear authority to set air and water quality standards, and to regulate the management of solid waste, but the authority to regulate reuse and protect against exposure via other pathways—ingestion, inhalation, dermal exposure—is not as clear, and varies by the material in question.

- Areas where there is clear statutory authority to consider public health impacts in

allowing recycling or reuse;

- Areas where authority to consider public health impacts in reuse or recycling is not clear but is needed; and
- Areas where FDEP has no authority, but where there is concerns about current policies or regulations governing use or land application could result in soil contamination

The third area noted above is clearly beyond FDEP authority and generally involves the lawful use of certain products. These are regulated by other agencies (e.g. the Department of Agriculture and Consumer Services) or not at all. Nevertheless, concerns have been raised, since use of these materials appears to be resulting in soil contamination, which exceeds the SCTLs, or otherwise poses a threat to public health and the environment.

For each issue, there is a brief overview, followed by excerpts of relevant statutes and regulations--where available. In many cases, there is no clear statutory authority or applicable rules Excerpts of some regulations are quite lengthy. However, this was considered necessary in order to capture all of the language relevant to the question of authority to consider human health and environmental impacts beyond air and water quality standards. Note that statute and rule language is shown in this smaller and different font type to distinguish it from the narrative sections. References to statutes are to Florida Statutes (F.S.); references to rules are to Florida Administrative Code (F.A.C.)

B. Areas where there is clear statutory authority to consider public health impacts in allowing recycling or reuse:

1. RECOVERED SCREENED MATERIAL

Recovered Screened Material (RSM) consists of dirt, wood, crumbled concrete, drywall, shingles and other materials screened from processed construction and demolition debris (C&D). It is produced at a number of C&D recycling facilities around the state and constitutes nearly 30 percent of the total waste processed. C&D recycling facilities want to sell or use RSM as fill as a revenue source, to free up needed space at recycling facilities, and to avoid disposal costs at landfills, where RSM is currently used as daily cover. The major concern with off-site reuse of RSM is arsenic, which is most likely from small fragments of chromated copper arsenate (CCA) treated lumber in the RSM. Based on a recent characterization study conducted by the Department and other interested parties, the upper 95 percent confidence limit for the geometric mean concentration of arsenic in RSM was approximately 2.7 mg/kg. This concentration was above the SCTL residential value of 0.8 mg/kg but below the industrial value of 3.7 mg/kg. Therefore, under current Department policy, the material could be reused in an industrial area. However, the Department, and a Technical Advisory Group comprised of industry representatives, have not been able to identify a statewide policy for institutional controls, which is practicable for industry, but still provides an adequate level of protection. Currently, RSM may be reused off-site on a case-by-case basis as approved by the Department's District offices.

Statute:**403.707 Permits.**

(12)(g): It is the policy of the Legislature to encourage facilities to recycle. The department shall establish criteria and guidelines that encourage recycling where practical and provide for the use of recycled materials in a manner that protects the public health and the environment. Facilities are authorized to recycle, provided such activities do not conflict with such criteria and guidelines.

Rule:**62-707.730 Construction and Demolition Debris Disposal and Recycling**

(13) c): In order to reuse recovered fines or screened materials other than clean debris from the construction and demolition debris waste stream, an owner or operator shall demonstrate that this material will be managed and reused in a manner that will pose no significant threat to public health or the environment. In making this demonstration, the owner or operator may consider background levels of receiving soils, whether the material will be blended with other materials, and the likelihood that the material may have unlimited distribution or come into direct contact with the public. Examples of management practices which would not require analysis for health-based criteria include permanent encapsulation, use as initial or intermediate cover or subsurface construction at a permitted landfill, or use under at least two feet of clean cover material.

2. COMBUSTOR ASH RESIDUE

Florida has 13 waste-to-energy (WTE) facilities with a combined capacity of 6 million tons per year. WTE plants are an essential component of Florida's MSW management strategy and accounts for disposal of 23 percent of the state's MSW. The plants produce an estimated one and one half million tons of ash residue per year, which under current regulations, must be disposed of in a lined landfill. To reduce disposal costs and prolong landfill life, there is considerable interest by the owners and operators of WTE plants in reusing the ash in a variety of applications. Ash residue has a number of engineering properties which make it useful as a building material. These include: as an amendment to concrete, concrete block, or asphalt; road sub-base and side embankment sub-fill. Ash has also been proposed as a biosolids stabilizing agent; and soil amendment. The principal concern with combustor ash residue is heavy metals, particularly lead, arsenic, chromium and cadmium. Combustor ash is often treated prior to disposal, to ensure that it is not a characteristic hazardous waste as determined by the Toxicity Characteristic Leaching Procedure, EPA Method 1311. However, while this treatment renders the metals nearly insoluble precipitates, it is not clear that it addresses the additional direct human exposure pathways of ingestion, inhalation and dermal contact.

Statute:**403.7045 Application of act and integration with other acts.—**

5) Ash residue generated by a solid waste management facility from the burning of solid waste must be disposed of in a properly designed solid waste disposal area that complies with standards developed by the department for the disposal of such ash residue. The department shall work with solid waste management facilities that burn solid waste to identify and develop methods for recycling and reuse of ash residue or treated ash residue, and the department may allow such recycling or reuse by an applicant who demonstrates that no significant threat to public health will result and that applicable department standards and criteria will not be violated.

The Division of Waste Management shall direct the district offices and bureaus on matters relating to the interpretation and applicability of this subsection. The department may adopt rules necessary for administering this subsection, but the department is not required to amend its existing rules.

Rule:

62-702.600 Recycling of Ash Residue. Processed ash residue which is recycled shall comply with the following:

(1) The generator shall, at least monthly, describe the chemical and physical properties of the ash residue which is to be recycled. The generator may request an alternate description schedule based upon the particular recycling process involved, the use of the recycled product, and the volume of ash residue recycled. The Department shall allow such an alternate description schedule if it determines that such schedule provides a substantially equivalent degree of protection for public health and the environment.

(2) Prior to beginning operations, the processor of the ash residue shall demonstrate to the Department that the process and use of the ash residue will not cause discharges of pollutants to the environment. The processor shall:

(a) Describe the chemical and physical properties of the finished product line, identify the quantity of ash residue used in a product, and identify quantity and quality of the product to be marketed or used;

(b) Demonstrate that the proposed process will physically or chemically change the ash residue so that any leachates produced after processing will not cause a violation of surface or ground water quality standards contained in Chapters 17-3 and 62-550, F.A.C.;

(c) Demonstrate that processed ash residue or products using ash residue will not endanger human health or the environment. Exposure risks to be considered include, but are not limited to, inhalation, ingestion, skin contact, and migration to soil, surface and ground water; and

(d) Establish performance standards and operational criteria for the process that are designed to demonstrate reliable operation in compliance with Rules 62-702.600(2)(a) through (c), F.A.C.

(3) The processor shall notify the Department of any changes in the process or ash residue which could affect the demonstrations made in (2) above.

3. SOLID WASTE COMPOST

Compost is made from yard trash, mixed municipal solid waste or animal manure. It may contain residual pesticides, solvents and heavy metals. Compost is one of the few areas in the law which gives the Department specific authority not only over the handling, storage and processing of compost, but also the approval of the final product. Because the compost rule has not been substantially amended since 1989, it utilizes the old biosolids numbers for heavy metals, which are at odds with the current numbers used in EPA's Part 503 Biosolids Rule¹, FDEP's domestic wastewater residuals rule (Chapter 62-640), as well as the SCTL numbers.

Statute:

403.7043 Compost standards and applications.--

¹ Environmental Protection Agency Final Rule, "Standards for the Use or Disposal of Sewage Sludge", February 19, 1993, 58 FR 9248.

- (1) In order to protect the state's land and water resources, compost produced, utilized, or disposed of by the composting process at solid waste management facilities in the state must meet criteria established by the department.
- (2) Within 6 months after October 1, 1988, the department shall initiate rulemaking to establish standards for the production of compost and shall complete and promulgate those rules within 12 months after initiating the process of rulemaking, including rules establishing:
- (a) Requirements necessary to produce hygienically safe compost products for varying applications.
- (b) A classification scheme for compost based on: the types of waste composted, including at least one type containing only yard trash; the maturity of the compost, including at least three degrees of decomposition for fresh, semimature, and mature; and the levels of organic and inorganic constituents in the compost. This scheme shall address:
1. Methods for measurement of the compost maturity.
 2. Particle sizes.
 3. Moisture content.
 4. Average levels of organic and inorganic constituents, including heavy metals, for such classes of compost as the department establishes, and the analytical methods to determine those levels.
- (3) Within 6 months after October 1, 1988, the department shall initiate rulemaking to prescribe the allowable uses and application rates of compost and shall complete and promulgate those rules within 12 months after initiating the process of rulemaking, based on the following criteria:
- (a) The total quantity of organic and inorganic constituents, including heavy metals, allowed to be applied through the addition of compost to the soil per acre per year.
- (b) The allowable uses of compost based on maturity and type of compost.
- (4) If compost is produced which does not meet the criteria prescribed by the department for agricultural and other use, the compost must be reprocessed or disposed of in a manner approved by the department, unless a different application is specifically permitted by the department.
- (5) Compost produced as a result of contracts with city or county governments entered into prior to October 1, 1988, shall not be required to meet the provisions of this section until 10 years after October 1, 1988.
- (6) The provisions of s. 403.706 shall not prohibit any county or municipality which has in place a memorandum of understanding or other written agreement as of October 1, 1988, from proceeding with plans to build a compost facility.

Rule:

62-709.300 General Provisions.

- (8) Composting facilities that process domestic sludge with yard trash are regulated under Rule 62-540, F.A.C.
- (9) Composting facilities that process domestic sludge with other solid wastes are regulated under this rule. However, nothing in this rule shall relieve such facilities from complying with other applicable federal or state regarding sludge management.

62-709.550 Classification of Compost.

(1) Compost shall be classified based on the type of waste processed, product maturity, the amount of foreign matter in the product, the particle size and organic matter content of the product, and the concentration of heavy metals as specified in the following sections.

(e) The codes in the following table for heavy metal concentrations shall be used in classifying the compost produced. The concentrations are expressed in mg/kg dry weight. In determining the appropriate classification code for parameter concentrations, if any one parameter falls in a higher concentration grouping, the code for that higher grouping will apply.

Parameter	CONCENTRATION CODES			
	1	2	3	4
Cadmium	<15	15-<30	30-100	>100

Copper	<450	450- <900	900-3,000	>3,000
Lead	<500	500-<1,000	1,000- 1,500	>1,500
Nickel <50	50-<100	100-500	>500	
Zinc	<900	900-<1,800	1,800-10,000	>10,000

62-709.600 Criteria for the Use of Compost.

- (1) Compost classified as Types Y, YM or A shall have unrestricted distribution.
- (2) Compost classified as Types B or C shall be restricted to use by commercial, agricultural, institutional or governmental operations. However, if it is used where contact with the general public is likely, such as in a park, only Type B may be used.
- (3) Compost classified as Type D shall only be used at landfills or land reclamation projects. However, such use shall not be allowed if contact with the general public is likely.
- (4) Type E must be disposed of pursuant to 62-701, F.A.C., unless demonstrated that use of this material will not endanger the public or the environment.
- (5) The total amount of heavy metal applied to soils shall be (in pounds per acre) as follows.
 - (a) Cadmium - 4.45
 - (b) Nickel - 111.
 - (c) Copper - 111.
 - (d) Zinc - 222.
 - (e) Lead - 445.
- (6) For applications where repeated use of the compost can be expected, such as in agricultural applications, the amount of heavy metal applied to soils shall be no more than one-tenth of the amount listed in (5) above per acre per year. For applications where repeated use of the compost is not expected, such as land reclamation or as a soil amendment on highway medians, the amount listed in (5) above may be applied within a one-year period.
- (7) If a person wishing to apply compost to the soil can demonstrate through an analysis of the cation exchange capacity and other physical and chemical characteristics of the receiving soil that a higher application rate will provide an equal degree of protection to the public and the environment, the Department may approve such application rates pursuant to Rule 62-709.700, F.A.C.
- (8) Compost shall not be used in any manner that will endanger public health and welfare, and the environment, or would violate the provisions of this rule.

4. DREDGED SPOIL

FDEP was recently involved with a proposed dredge and fill project in which the issue of the standards for the disposal of the spoil came into play. The City of Stuart applied for a permit to dredge Krueger Creek, a small tributary to the St. Lucie River. The project called for depositing the spoil on a vacant residential lot along the creek. FDEP told the applicant that the spoil had to meet the SCTLs or background at the site. The SCTLs have not generally been used in dredge & fill cases, but FDEP believes they could be.

Statute:

403.7045 Application of act and integration with other acts.—

(3) The following wastes or activities shall be regulated pursuant to this act in the following manner:

- (a) Dredge spoil or fill material shall be disposed of pursuant to a dredge and fill permit, but

whenever hazardous components are disposed of within the dredge or fill material, the dredge and fill permits shall specify the specific hazardous wastes contained and the concentration of each such waste. The department may then limit or restrict the sale or use of the dredge and fill material and may specify such other conditions relative to this material as are reasonably necessary to protect the public from the potential hazards.

Rule: No specific rule establishing spoil contaminant levels based on impacts on human health

5. BIOSOLIDS

Biosolids, also called domestic wastewater residuals, or sludge, are liquid and solid materials resulting from domestic wastewater treatment. They are typically land applied in agricultural areas. The standards for reuse of biosolids are contained in Part 503 of the Code of Federal Regulations Clean Water Act, which were adopted by FDEP in Rule 62-640. The principal issue with the reuse of biosolids as it relates to the reuse of materials from solid waste and potential soil contamination, is that there is a wide discrepancy between the 503 values and the SCTLs. This is illustrated in the following table, which compares the Exceptional Quality (EQ) and Pollutant Quality (PC) Concentration Limits and Maximum Concentration limits for the land application of biosolids to the residential and industrial SCTL values for thirteen metals. The differences between the values are due to differing assumptions used in conducting risk assessments for the two sets of values.

Comparison of 503 and SCTL Criteria for Metals				
	503 Biosolids Criteria		SCTLs	
	EQ and PC	Maximum		
Parameters	Conc. Limit	Conc. Limit	Residential	Industrial
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
TCLP Metals				
Arsenic	41	75	0.8	3.7
Barium	None	None	105	87,000
Cadmium	39	85	8	1,300
Chromium	None	None	290	430
Lead	300	840	500	920
Mercury	17	57	4	28
Selenium	100	100	390	10,000
Silver	None	None	390	9,100
Other Metals				
Aluminum	None	None	72,000	1,000,000
Copper	1,500	4,300	105	12,000
Molybdenum	None	75	390	9,600
Nickel	420	420	105	28,000
Zinc	2,800	7,500	23,000	560,000

Note that the 503 standards adopted in Chapter 62-640 have only recently been approved by the ERC (February, 1998), after some four years of work, so there is little interest in

revisiting these criteria or the rule anytime soon.

Statute:

403.051, 403.061, 403.062, 403.087, 403.088, 403.704, 403.707,

403.7045 Application of act and integration with other acts.--

(1) The following wastes or activities shall not be regulated pursuant to this act:

(b) Suspended solids and dissolved materials in domestic sewage effluent or irrigation return flows or other discharges which are point sources subject to permits pursuant to provisions of this chapter or pursuant to s. 402 of the Clean Water Act, Pub. L. No. 95-217;

Rule:

62-640.700 Criteria for Land Application of Residuals.

(1) General Criteria. Residuals may be applied to land only if concentrations of all the parameters listed in Rule 62-640.650(1)(b), F.A.C., do not exceed the following ceiling concentrations in any sample, and the residuals meet the pathogen and vector attraction reduction requirements set forth in Rule 62-640.600, F.A.C., for the intended site use.

CEILING CONCENTRATIONS
(mg/kg dry weight basis)

Parameter	Concentration
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500

(3) Cumulative Application Limits.

(a) The total cumulative loading of each parameter identified in Rule 62-640.700(3)(b), F.A.C., which is applied to each application zone on an application site shall be determined and provided to the Department in the annual summary submitted on Department Form 62-640.210(2)(b). The beginning date for cumulative loading determination shall be as described in Rule 62-640.650(3)(b)3., F.A.C. The total cumulative loading shall be reported in pounds per acre (1 acre = 0.4047 hectare).

(b) The application of residuals to application zones which accept residuals that meet the ceiling concentration limits in Rule 62-640.700(1), F.A.C., but do not meet the requirements of Rule 62-640.850(3)(a), F.A.C., shall be restricted by the following cumulative application limits:

CUMULATIVE APPLICATION LIMITS
(pounds per acre)

Arsenic	36.6
Cadmium	34.8
Copper	1340
Lead	268
Mercury	15.2

Nickel	375
Selenium	89.3
Zinc	2500

(c) Except as provided in Rule 62-640.700(3)(d), F.A.C., application zones which only receive residuals that meet the parameter concentration limits in Rule 62-640.850(3)(a), F.A.C., are not subject to the cumulative application limits in Rule 62-640.700(3)(b), F.A.C.

(d) Beginning with the first application of residuals that do not meet the parameter concentration limits in Rule 62-640.850(3), F.A.C., to an application zone, the zone shall be subject to the cumulative application limits in Rule 62-640.700(3)(b), F.A.C., and all applications of residuals, except Class AA, shall be used to determine the cumulative loading of parameters applied to the zone.

(e) If one or more zone(s) at an application site changes ownership or becomes part of a different application site, the cumulative loading determination for the affected zone(s) shall account for the prior applications of residuals.

(f) If residuals that are subject to the cumulative loading limitations of Rule 62-640.700(3), F.A.C., have been applied to an application zone, and the cumulative loading amount of one or more pollutants is not known, no further applications of residuals may be made to that application zone.

62-640.850 Distribution and Marketing -- Class AA Residuals.

Residuals or residuals products shall be designated as Class AA if the requirements of this section are met, and the residuals are distributed and marketed.

(1) Residuals or residuals products shall meet the Class A pathogen reduction standards of Rule 62-640.600(1), F.A.C.

(2) Residuals or residuals products shall meet one of the vector attraction reduction requirements in Title 40 Code of Federal Regulations Part 503, Section 503.33(b)(1) through (b)(8).

(3) Residuals or residuals products shall be analyzed in accordance with Rule 62-640.650(1), F.A.C., on a monthly basis, and the results shall be submitted to the Department in accordance with Rule 62-640.850(4), F.A.C.

(a) The residuals or final residuals products shall have monthly average parameter concentrations not exceeding the following criteria:

CLASS AA PARAMETER CONCENTRATIONS*
(mg/kg dry weight basis)

<u>Parameter</u>	<u>Monthly Average</u>
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2800

*The ceiling concentrations in Rule 62-640.700(1), F.A.C., also apply.

(b) If the residuals must be blended with other materials to meet the criteria of Rule 62-640.850(3)(a), F.A.C., the blending shall be conducted by a Department permitted domestic wastewater treatment facility or residuals management facility before the residuals are distributed or marketed. The blending methodology shall be specified in the facility's permit.

C. Areas where authority to consider public health impacts in reuse or recycling is not clear but is needed

1. SOIL TREATMENT FACILITIES

A soil thermal treatment facility is currently defined in Chapter 62-775, F.A.C. as a facility which thermally treats or processes "petroleum contaminated soils". For such soils, the authority to set reuse standards emanates from Chapter 376, F.S. and the Petroleum Contamination Site Cleanup Criteria rule, Chapter 62-770, F.A.C. However, for other types of contaminated soils treated in such facilities, e.g., manufactured gas plant contaminated soils, the authority to set such standards is less clear. The Soil Thermal Treatment Facilities rule, Chapter 62-775, F.A.C. is currently under revision, and is planned to be reissued as Chapter 62-713, F.A.C. The new rule will address facilities which treat soils contaminated with petroleum and other chemicals provided they are not hazardous wastes. It will also be expanded to include treatment technologies other than thermal treatment such as bioremediation. The metal standards in the existing Chapter 62-775, F.A.C. are out of date and do not conform to the SCTLs. The current draft of the rule references the SCTLs, as found in Chapter 62-785, as the standard for clean soils.

Statute:

376.303, 376.3071, 403.061, FS.

Rules: NOTE: Rule 62-775 is being revised and will become rule 62-713.

62-775.100 Intent.

(1) Chapter 62-770, F.A.C., establishes petroleum or petroleum product contamination cleanup criteria and a cleanup process which must be undertaken at all petroleum contamination sites. As a result of this cleanup effort, petroleum contaminated soils may be removed for thermal treatment.

(2) The State of Florida Department of Environmental Protection promulgates this chapter in order to provide assurances that petroleum contaminated soils as defined in Rule 62-775.200, F.A.C., which are removed for thermal treatment, are properly handled and are treated to levels that will not endanger public health or cause future contamination of other soils, ground water, and surface water.

62-775.200 Definitions

(9) "Petroleum contaminated soil" means soil which has become contaminated with one or more of the following liquid products made from petroleum: all forms of fuel known as gasoline, diesel fuel, jet fuel, kerosene, grades 2 through 6 fuel oils, crude oil, bunker C oil, residual oils; and non-hazardous petroleum based lubricating, hydraulic, and mineral oils. This definition applies only to the regulation of soil thermal treatment facilities.

(12) "Soil thermal treatment facility" means either a stationary or mobile facility designed, constructed or utilized, and permitted by the Department to handle, store, and thermally treat or process petroleum contaminated soils. "Soil thermal treatment facility" does not include electrical power plants in which thermal treatment of contaminated soils from their own property results in

ash which is disposed of in accordance with Chapters 62-701 or 62-702, F.A.C., or facilities that treat hazardous waste or hazardous substances.

62-775.300 General Permits.

(5) Soil thermal treatment facilities shall treat soils to the extent necessary to comply with the criteria for clean soil in accordance with Rule 62-775.400, F.A.C. Soil sampling and analysis shall be in accordance with Rule 62-775.410, F.A.C.

62-775.400 Criteria for Clean Soil.

Treated soil must comply with the following cleanup levels to be classified as clean soil. Mixing of treated soils to achieve these standards is prohibited.

(1) Total Volatile Organic Aromatics shall not exceed 100 ug/kg (100 ppb) using the analysis identified in Rule 62-775.410(1)(a), F.A.C.,

(2) Total Recoverable Petroleum Hydrocarbons (TRPH) shall:

(a) not exceed 10 mg/kg (10 ppm) using the analysis identified in Rule 62-775.410(1)(b), F.A.C., or

(b) not exceed 50 mg/kg (50 ppm) using the analysis identified in Rule 62-775.410(1)(b), F.A.C., provided the total of the Polynuclear Aromatic Hydrocarbons (PAH) does not exceed 1 mg/kg (1 ppm) using the analysis identified in Rule 62-775.410(1)(c), F.A.C., and the total of the Volatile Organic Halocarbons (VOH) does not exceed 50 ug/kg (50 ppb) using the analysis identified in Rule 62-775.410(1)(d), F.A.C.,

(3) Metals shall not exceed the following concentrations in Table I using the analyses identified in Rule 62-775.410(1)(e), F.A.C. The appropriate preparation methods identified in Rule 62-775.410(2), F.A.C., shall be used prior to metal analysis.

TABLE I

	Maximum Concentration	
	TCLP*	Total
Metals	(mg/l)	(mg/kg)
Arsenic	5.0	10
Barium	100.0	4940
Cadmium	1.0	37
Chromium	5.0	50
Lead	5.0	108
Mercury	0.2	23
Selenium	1.0	389
Silver	5.0	353

*TCLP = Toxicity Characteristic Leaching Procedure

(4) Under no circumstances may soils which exhibit the characteristic of toxicity for metals (EPA HW No. D004-D011) as established in 40 CFR 261.24 be blended. However, blending of soils prior to treatment to achieve the total metals criteria in Rule 62-775.400(3), F.A.C., is allowed if the pre-blended soil does not exhibit the characteristic of toxicity for those metals. Records shall be maintained of blending procedures used to comply with the total metals standards. Either records of blending ratios with calculations to estimate total metals concentrations of blended soil or resampling and analysis of blended pretreatment soil are acceptable. Uncontaminated soil shall not be used for blending.

(5) Soil which exhibits the hazardous characteristic of toxicity must be treated or disposed of at an approved hazardous waste treatment/disposal facility.

1. INDUSTRIAL BYPRODUCTS

Periodically, industries will propose use of an industrial byproduct by land application. Examples include a material called HiClay Alumina, a byproduct from the manufacture of alum, and short paper fibers from the pulp and paper industry, both to be added to soil as a soil amendment. Typically, the industrial process itself and the waste streams produced are regulated under an Industrial Wastewater permit. Conditions for the on-site disposal of solid waste are then added to the Industrial Wastewater permit. However, the authority to regulate the off-site use of industrial byproducts in terms of their impacts on human health and the environment is less clear. The statute requires that industrial byproducts cannot be used “such that a threat of contamination in excess of applicable department standards and criteria is caused.” However, there are no specific criteria for protection of human health based on direct human contact.

Statute

403.7045 Application of act and integration with other acts.--

(1) The following wastes or activities shall not be regulated pursuant to this act:

(f) Industrial byproducts, if:

1. A majority of the industrial byproducts are demonstrated to be sold, used, or reused within 1 year.
2. The industrial byproducts are not discharged, deposited, injected, dumped, spilled, leaked, or placed upon any land or water so that such industrial byproducts, or any constituent thereof, may enter other lands or be emitted into the air or discharged into any waters, including groundwaters, or otherwise enter the environment such that a threat of contamination in excess of applicable department standards and criteria is caused.
3. The industrial byproducts are not hazardous wastes as defined under s. 403.703 and rules adopted under this section.

Rule: None

2. RECOVERED MATERIALS

Recovered materials include glass, paper, steel, aluminum, plastic containers, cardboard and other similar materials separated from the waste stream prior to disposal. They are typically not land applied, however because they are treated identically to industrial byproducts, if a land application of some kind were proposed, reuse would encounter the same regulatory issues as with industrial byproducts.

Statute:

403.7045 Application of act and integration with other acts.--

(1) The following wastes or activities shall not be regulated pursuant to this act:

(e) Recovered materials or recovered materials processing facilities shall not be regulated pursuant to this act, except as provided in s. 403.7046, if:

1. A majority of the recovered materials at the facility are demonstrated to be sold, used, or reused within 1 year.
2. The recovered materials handled by the facility or the products or byproducts of operations that process recovered materials are not discharged, deposited, injected, dumped, spilled,

leaked, or placed into or upon any land or water by the owner or operator of such facility so that such recovered materials, products or byproducts, or any constituent thereof may enter other lands or be emitted into the air or discharged into any waters, including groundwaters, or otherwise enter the environment such that a threat of contamination in excess of applicable department standards and criteria is caused.

3. The recovered materials handled by the facility are not hazardous wastes as defined under s. 403.703, and rules promulgated pursuant thereto.

4. The facility is registered as required in s. 403.7046.

Rule: Rule 62-722, FAC, establishes criteria for the registration and reporting of Recovered Materials Dealers, but sets no standards for reuse.

3. MANUFACTURED SOILS

Several requests have been presented to the Department in recent years to approve use of “manufactured soils.” These artificial soils consist of materials such as short paper fiber, compost, animal manure and other materials derived from solid waste, for use in landfill final cover, land reclamation, landscaping, horticulture and other applications. The Department’s authority to regulate these materials, or set standards for their allowable use, are unclear. On the one hand, they can be considered products and not regulated by the Department. Yet, on the other hand, since they are largely comprised of materials derived from solid waste, there is concern about potential soil and ground water contamination. there is also concern about potential adverse human health effects from direct human contact if these materials are not properly managed.

4. STORMWATER SEDIMENTS

Sediments which accumulate in stormwater control systems, such as swales and holding ponds, must be routinely removed to maintain these systems. Deciding how to dispose or use these sediments has become increasingly difficult in Florida. The Department has conducted research² to characterize stormwater residuals to assist in their proper management. This research showed that stormwater sediments can be contaminated with chromium, lead, zinc, polynuclear aromatic hydrocarbons and some pesticides. While the residuals were generally not determined to be a hazardous waste, the contamination levels require these materials be properly managed. Department policies and practices for disposal or reuse of these materials are unclear.

5. STREET SWEEPINGS

Most large towns and cities in Florida sweep their streets and thereby accumulated large quantities of street sweepings (frequently they do so as a Best Management Practice

² Cox, J.H., et. al., Characterization of Stormwater Contaminated Sediment and Debris For Determining Proper Disposal Methods, Final Report, Division of Water Facilities, Florida Department of Environmental Protection, August 6, 1997.

(BMP) to improve stormwater quality). FDEP considers street sweepings to be solid waste, and current policy requires that this material be disposed of in a lined landfill, where it is frequently used as daily cover. However, because disposal costs are high, there is interest by cities in reusing screened street sweepings in medians, flowerbeds and other road related landscaping projects. There is currently research being conducted by the Florida Center for Solid and Hazardous Waste Management, to better characterize street sweepings by neighborhood type, which may form the basis for determining reuse. FDEP would utilize the SCTLs as guidelines for allowing reuse.

6. DRINKING WATER TREATMENT SLUDGES

Treatment of public water supply systems through the use of chemicals such as alum, lime and iron sulfate can result in the generation of large volumes of water treatment sludges. In the past these wastes have been disposed of at landfills. The Department has received proposals to use drinking water treatment sludges as a soil amendment and as a final cap on a Superfund site. These sludges may have elevated levels of metals and organic chemicals which could be of concern in their use. The Department has little data on the chemical characterization of these materials and policies or practices for their disposal or reuse are unclear.

Statute: 403.861(9), FS

Rule: Rule 62-555, FAC governs the construction and operation of public drinking water systems, but has no criteria for the disposal or reuse of treatment sludge.

7. PHOSPHOGYPSUM

The manufacture of phosphate fertilizer produces huge amounts of phosphogypsum, or hydrated calcium sulfate. There has long been interest in reuse of the material as road base and as a soil amendment, but it contains small amounts of radioactive material and metals. Arsenic concentrations in the phosphogypsum appear to be above the industrial SCTL. Some data also suggests phosphogypsum may have concentrations of antimony and vanadium which are above the Department's residential SCTL. Because of concerns about radon gas, the EPA has prohibited reuse for all but peanut farming. Recently, EPA and the Department have been considering the reuse of phosphogypsum as road subfill on a road project in Florida. A key issue in the discussion is the acceptable level of risk from exposure to radon. In addition, human health risks from direct human contact to metals are of concern.

Statute: 403.704, 403.061, FS.

Rule: 62-673, Phosphogypsum Management governs the management of phosphogypsum but contains no criteria for reuse. The rule does make it clear that phosphogypsum is a solid waste and defines disposal.

62-673.200 Definitions.

(5) "Disposal" means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste into or upon any land or water so that such solid waste or any constituent thereof may enter other lands or be emitted into the air or discharged into any waters, including groundwaters, or otherwise enter the environment.

(13) "Phosphogypsum" means calcium sulfate and byproducts produced by the reaction of sulfuric acid with phosphate rock to produce phosphoric acid. Phosphogypsum is a solid waste within the definition of Section 403.703(13), F.S

9. FOSSIL-FUEL COMBUSTION ASH

Most ash from the combustion of coal in power plants is disposed of in landfills or impoundments. These disposal activities are usually regulated by the facility's Industrial Wastewater permit. However, some coal fly ash is used in the production of cement and concrete. This use has been encouraged by EPA³ and is practiced in Florida. The Department has also received proposals for use of coal fly ash in road base construction. In addition, coal bottom ash is often used as a sand blasting media where after this use it can be mixed with paint chips having elevated concentrations of metals. While EPA has made the determination that fly ash, bottom ash, boiler slag and flue gas emission control waste from fossil-fuel combustion processes should not be regulated as a hazardous waste, it prefers the methods for utilization of these materials be decided by the states⁴. The Department has also received proposals for using fly ash and bottom ash from the combustion of petroleum coke to make aggregate for road bed construction. Little data on the chemical characterization of these materials are available to the Department. the potential for human health risks from direct human contact and impacts to groundwater are unknown but may be of concern. Department policies or practices for the use if these materials are unclear.

D. Areas where FDEP has no authority, but where there are concerns about current policies or regulations governing use or land application which could result in soil contamination

1. ARSENIC HERBICIDES USED ON GOLF COURSES

Arsenic based pesticides like lead arsenate used to be widely used in Florida, but have all but been phased out. A notable exception is the use of a broad-leafed herbicide on golf

³ Environmental Protection Agency Final Guideline, "Guidline for Federal Procurement of Cement and Concrete Containing Fly Ash," January 28, 1983, 48 FR 4230.

⁴ Environmental Protection Agency Final Rule, "Final Regulatory Determination on Four Large-Volume wastes From the Combustion of Coal by Electric Utility Power Plants," August 9, 1993, 58 FR 42466.

courses, especially around tees and greens. FDEP has analyzed soils at golf course tees and greens and found arsenic levels above the SCTL residential arsenic number. This is an issue when old golf courses are converted to residential property.

USE OF KO-61 EAF DUST IN FERTILIZER

EAF dust is emission control dust from the primary production of steel in electric arc furnaces. This dark-colored powder, referred to as KO61, its hazardous waste designation, typically has the following hazardous constituents: hexavalent chromium, lead and cadmium. However, it is nevertheless used as a source of trace metals, especially zinc, in fertilizer. There have been some reports of adverse impacts on crops and livestock from the KO61 containing fertilizers. This has become a major issue in Washington state, where the lack of state and federal regulation is seen as a legal “loophole”. KO61 containing fertilizers are specifically exempt from regulation by RCRA. A task force of industry and state-government representatives had been formed in Washington to address the issue and set specific limits for heavy metals in fertilizer.

2. CCA TREATED LUMBER

Pressure treated CCA lumber is treated with a solution of copper, chromium and arsenic. While generally tightly bound with the wood material, these metals can leach out of the wood over time. Analysis of soils under CCA treated decks indicate elevated levels of metals. Moreover, CCA wood is increasingly complicating some aspects of solid waste management. The primary problems with reuse of RSM discussed above are due to CCA treated lumber. The land application of wood ash from two cogeneration facilities in Palm Beach County, which burn urban wood waste, had to be discontinued because of high levels of arsenic.

3. LEAD SHOT USED IN SKEET RANGES

FDEP was recently involved in a dispute over the siting of a skeet shooting range. Neighbors who opposed the site contended that the use of lead shot at the range could contaminate ground and surface water quality, pose a toxic threat to wildlife and contaminate soils. Some skeet ranges in other states have banned the use of lead shot for these reasons. And it is illegal under federal law to shoot at migratory waterfowl with lead shot.