

12200 S. Carondelet Ave., Chicago, Illinois – Gulf Sulphur Services Ltd., LLLP
Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 3-A

Article: Elemental Sulphur – A Pure Product and How to Keep it Pure

Sulphur2005

MOSCOW • RUSSIA

23-26 OCTOBER 2005

Elemental Sulphur – A Pure Product and How to Keep it Pure

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Recovered elemental sulphur can be an exceptionally pure bulk commodity (99.9%+). The buyer would like to keep that purity all the way to the end user. But how much of the more than twenty million tones of this high purity raw material that is traded internationally each year sits in storage, is extensively handled and transported and is often shipped long distances by rail and ship before it reaches its end use destination? Almost all of it. And purity in the hands of the end user depends on how it is treated in these processes. "Bright yellow formed solid elemental sulphur in bulk" is not such an easy specification to maintain.

The sources of the contaminants that are picked up along the way and how these can be minimized or excluded will be examined. If not excluded how much can be tolerated for what purposes and what are the consequences of leaving them in the sulphur? Are there cheaper and more effective ways of maintaining product purity? Does product purity have an environmental impact consequence? Do impurities cause unnecessary damage to handling, storage and transportation facilities? What about insurance protection and product liability questions? Is this where technology meets economics and where operations and marketing find common cause?

THE PUREST BUT THE CHEAPEST

Elemental sulfur is the one of the cheapest, purest, most available but least appreciated elementary substance known to human kind. Bested only by oxygen and nitrogen of the air, which are supposedly free, the commodity that HELL is claimed to be made of sells today at 6 US cents or about 2 rubles a kilo. And even in bulk its internationally accepted purity specification is commonly 99.90% or higher. Our host country Russia recently offered a "six nines" specialty sulphur at 99.9999% purity. This should be compared with so called "three nines pure gold" at a lowly 99.9%. By the way, in litigation about cargo contamination watch the number of significant figures in these cited specifications. If the specification is said to be 99.9% not 99.90%, a sample with a measured purity of 99.86% meets the 99.9% specification - rounded up! That leaves 0.04% difference or a whole 400 ppmw of impurities "unaccounted for". Some of the maxima specified for certain impurities (see Chart 1) are already LESS than 400 ppmw!

This is not the first time that the sulfur purity question has been addressed at a British Sulphur Conference. So why yet again? The answer is Supply and Demand. As we enter yet another phase of plentiful supply (oversupply is not a market friendly term!) there is a natural trading desire to emphasize what is GOOD about one source of sulphur over another. Purity is an obvious Good and maintaining it through all the stages from production to consumption can become a market advantage especially if the consequences to the user of a purer product can be identified.

What are the potential impurities and how did they get there? The first two columns of Chart 1 attempt to summarize the commonly encountered impurities. We now examine each in turn, how to minimize each impurity and the "tolerable level" for various end users.

ASH

As implied by its name, ash is what is left when a sample of solid elemental sulphur is burned, as most is on the way to making sulphur dioxide as the feed to a sulphuric acid plant. If the ash is excessive (the acid makers want no more than 500ppmw or 0.05%) it can clog filters, interfere with catalyst performance by blocking porosity and even, in certain instances, react chemically in the acid production process to produce unwanted gases, for example chlorine from chloride salt "ash".

What are the common sources of ash? On an intermittent basis, fines content from new catalyst charges can be a source of alumina (Al_2O_3) or Titania (TiO_2) ash washed out by the liquid sulfur that condenses in the catalytic reactor beds. The product from reaction of hydrogen sulphide and sulphur with iron/steel of furnace, piping and reactor vessels is a form of iron sulfide. This can be carried out of the SRU as a contaminant in the liquid sulphur product stream. Similar corrosion products from the reaction of wet elemental sulfur with unprotected carbon steel in the downstream handling, storage and transportation equipment can also be a source of ash in the product solid sulphur that arrives at the end user's plant. Mineral contamination of various kinds can also arise from the environment such as dust, soil, sand and dirt when the all important matter of "good housekeeping" is not carefully and consistently observed in the storage handling and transportation of the pure sulphur product. It is also one argument in favour of covered storage for bulk formed sulphur to counter the many arguments against covering the stock pile.

How to minimize? Check your catalyst charge for particle size distribution as often as is practical. Control corrosion wherever and whenever economically possible not only to preserve the lifetime of the SRU and other downstream components of the system but to protect the purity of the sulphur passing through it. Materials selection, coatings, storage conditions, moisture content, inhibition are among some of the steps that can be taken to minimize the production of ash forming contaminants and keep the product sulphur pure and low in ash all the way to the end user. And hopefully to keep your market and, who knows, even get a few rubles more for it.

The Impurity	The Source	The Effect	The Avoidance
Ash, Metal Oxides (<500 ppmw)	Catalyst fines Corrosion Product Sand grit soil clay	Block liq.S filters Plug burner nozzles Discolour product	Catalyst selection Catalyst loading Material selection Good housekeeping
Carbon/ Hydrocarbons Amines (<250 ppmw)	Inefficient gas sweetening, amine carryover, incomplete burn in-line gas fired reheaters, low FEF operating temp.	Weakens solid S product strength Carsul formation poor product color water generation in acid plant feed	Better SRU/sweet- ening operation. Avoid degas cat- alyst carry over. Do not use in -line re-heaters
Hydrogen sulphide Polysulphide (<10 ppmw)	Residual traces of source material	toxic when released effect on strength of solid product	Improve SRU conversion Degassing
Water (0.5-1.5% by weight)	Mostly post SRU Wet forming methods Storage rain and dust Suppression. Handling Transportation	Corrosion of metal containment system Production of acid Bulk instability when excessive. More heat needed to melt	Use dry forming methods. Minim- ise application for dust control Keep covered
Acidity (0.020% by weight)	Mostly by microbio- logical oxidation of wet product in store/ transport	Corrosion contain- ment systems include PC concrete. Not wanted in acid feed	Keep dry. Spray biocide. SLS lime wash vessels
Chloride	Unsweetened/partially sweetened process water Seawater from transport	Forms volatile heavy metal catalyst chlor- ides in acid making	Use fully sweet process water. No seawater in- gress in transport
Swelling Clays	Soil dust contamination during storage	Weakens structural sulphur products e.g. S- concrete	Better house- keeping and handling
Polymer content	Exposure to high temp. while liquid	Changes strength/ grinding properties of solid (rubber makers)	Avoid excessive prolonged heating of liquid phase

CHART 1: IMPURITIES IN ELEMENTAL SULPHUR – THE OVERVIEW

CARBON

Carbon is the term used to describe not just contamination by the element carbon - which can occur - but also the by carbon content of hydrocarbons and other organic compounds that may have been used in the upstream sweetening of the sour gas stream that feeds the SRU. In a well run sour gas sweetening unit (likely alkanolamine charged) carry over of hydrocarbon from the raw gas feed should not exceed 0.6% including both alkanes (methane, ethane, propane etc) and aromatics (BTX). If the front end reaction furnace is operating at a suitably high temperature (1150C+) most of these hydrocarbons will be burnt to carbon dioxide and water and will not reach the Claus catalytic beds. If they do they can undergo undesirable chemical reaction over the catalyst and deposit deactivating films on the catalyst surface that can end up in the product sulphur. Although this condition may be regenerable it is undesirable.

Incomplete combustion of natural gas used in gas fired in-line reheaters in the Claus section of an SRU can also be a significant source of residual hydrocarbon in product elemental sulphur.

The main effect of residual hydrocarbon on the purity of the product sulphur is the potential for formation of the carbon-sulphur polymer referred to in the business as Carsul. This is a variable composition polymeric material containing hydrocarbon fragments linked by sulphur or polysulphide entities which "matures" by ejecting sulphur from the polymeric molecular structure over time. The Carsul thus becomes less sulphur like and more carbon like. As such it becomes less soluble in the main bulk of the product liquid sulphur. It separates from solution in the sulfur giving the sulphur product an off-yellow colour and eventually it can float to the surface of liquid sulphur. This floating, often black, sticky Carsul can cause problems in valves, on mixers and feed nozzles through which the liquid sulphur may flow. It is not a popular "bonus" with buyers and acid makers.

In addition, if the actual hydrocarbon content of the sulphur is significant, even if there is little Carsul present, the hydrogen content of the hydrocarbon residues in the sulphur will burn to water during combustion of the sulphur to sulphur dioxide. Wet sulphur dioxide is not a welcome feed in most sulphuric acid plants.

The presence of Carsul in the solid sulphur product matrix also adversely affects its physical properties likely by interfering with the crystal and molecular structure. This is especially true when the carbonaceous impurity is an amine. For example, in the case of the aromatic amines morpholine or quinoline, used as a degassing catalysts in some systems (see later under hydrogen sulphide) its presence can virtually wipe out the polymeric sulphur content of the degassed sulphur. Although the polymeric content can recover somewhat over time, if the sulphur is held in the liquid state (140C or higher), the physical strength of the resultant solid sulphur can be reduced by 50% to 75% by the presence of residual morpholine (ASRL and Enersul data). This is then reflected in the fines generation during handling and the environmental impact of these fines when they are rendered airborne as dust.

Checking for the presence of such residual hydrocarbons and amine can be quite effectively performed in a single FTIR scan of the liquid sulphur sample.

There are thus many reasons why the purity of solid formed elemental sulphur with respect to organic carbon species should be kept to a minimum. Some are related to the potential environmental impact of the product (friability, fines and dust) and some to the end uses of the commodity particularly in acid making. Just because it is handled in bulk and in lots of many thousands of tones does not mean that it should be treated with disrespect. That attitude can turn out to be a costly one.

THE CONSISTENCY OF ANALYTICAL NUMBERS

Much commercial significance may lie in the analytical numbers that report the claimed purity of the package of sulphur being delivered. The typical variation observed in these numbers is of importance. The examples in Chart 2 represent a case in point. Both sulfur products meet the <500 ppmw ash and < 250 ppmw carbon specifications but the product from Plant # 2 is clearly purer than from Plant #1. The main difference is in the ash content which is essentially undetectable in the Plant 2 case, but significant especially in the first three samples from Plant # 1. A 10,000 MT load of this sulphur might produce over 1.7 MT of filter residue in the sulfur remelter. Was this part of the package perhaps exposed to corrosion product contamination in storage or transportation? Clearly sample #2 from plant #1 comes very close to failing the <250 ppmw carbon specification and might have been visibly discolored. This kind of variation within a given source of product is not uncommon, but if it is present it should be checked by at least two independent laboratories before claims are made. As seen, both labs found these samples high in carbon but different enough to possibly disagree on whether the sample failed or passed had the values been slightly higher. Analyse with care. It is cheaper than a legal hassle!

Source	Sample #	ppmw ash		ppmw carbon	
		Lab. 1	Lab 2	Lab 1	Lab 2
SULPHUR	1	170	110	50	110
Plant #1	2.	160	140	220	230
	3.	120	110	50	60
	4	60	<10	30	40
	5	30	10	70	70
	6	60	80	30	50
SULPHUR	1	10	10	30	130
Plant #2	2	<10	<10	40	30
	3	<10	<10	60	30

CHART 2 – TYPICAL ANALYTICAL CONSISTENCY, ASH AND CARBON

HYDROGEN SULPHIDE AND POLYSULPHIDES

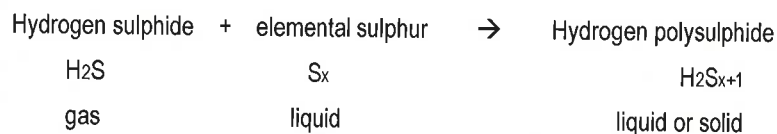
As the world's source of supply of elemental sulphur changed from mining (as in Frasch mining) to recovered (as in Claus sulphur recovery from hydrogen sulphide) so also did the industry's interest in hydrogen sulphide as a residual impurity in the commodity. It is hardly surprising that sulphur made from hydrogen sulphide contains a few ppmw of the source material. How much can be tolerated and what does it do to the product?

Interestingly, even with our present extensive knowledge of the answers to both of these questions, one major world producer and consumer of sulphur still has no regulated value for the maximum tolerable amount. There are indications that that may be about to change driven, as has become common, by the environmental engine.

To an increasing extent the accepted world wide industry standard is 10 ppmw (maximum) combined hydrogen sulphide and its derivative hydrogen polysulphide. Although the question of the hydrogen sulphide /polysulphide residue equilibrium in liquid sulphur only came to be a significant question when petroleum based recovered sulphur took over the market, it is historically interesting to note that the earliest and most definitive work was done by a Frasch miner - Weiwiorowsky of Freeport Sulphur!.

Residual hydrogen sulphide in elemental sulphur is 99.9999% of its smell! The human nose can detect it - at least once - at 0.005 ppmv or five parts per billion. That is perhaps Mother Nature's way of protecting humanity from the toxic effects of hydrogen sulphide which gets to be lethal at a few hundred ppmv. And an environmental smell is a powerful regulatory weapon! De-Gas or Be-Fined?

The effects of hydrogen sulphide trapped in elemental sulphur are complicated by the fact that it reacts with liquid sulphur to produce the polysulphide, a now very well understood chemical equilibrium process.



The practical significance of this equilibrium is that it effects the rate at which the residual total hydrogen sulphide and polysulphide impurity content of the sulphur can escape to atmosphere. Hydrogen polysulphide must first decompose to the gaseous hydrogen sulphide before it can be released. Thus, a perfectly decent smelling load of sulphur (little free hydrogen sulphide present) can be loaded into a closable containment vessel and some time later opened to release toxic concentrations of hydrogen sulphide gas built up by the slow conversion of the trapped polysulphide to the gaseous and toxic hydrogen sulphide. Confined space entry regulations do have their place in the sulphur business !

With intentionally degassed sulphur, of course, this does not happen to the same extent and hence the growing interest in the degassing processes that have come on the market and into use in recent years (including Enersul's Hyspec process). Such processes can readily achieve below 5 ppmw levels of residual combined (as polysulphide) and free hydrogen sulphide and are in increasing use to improve the purity and safety of the elemental sulphur product.

But there is another environmentally related effect of residual hydrogen sulphide. It can weaken the solid sulphur product, make it more friable, produce more fine particles when it breaks up and these can become environmentally unfriendly sulphur DUST. For example, Enersul GX granular formed product made from liquid sulphur that has been degassed by passage through an Enersul Hyspec degasser (<5ppmw residual H₂S/H₂S_x) is a higher quality product than when non-degassed product is the feed sulphur to the GX granulator.

WATER

There are two common sources of contaminant water in solid, formed, bulk elemental sulphur. If the forming process has used immersion in water as the method of heat removal from the liquid sulphur feed (wet formed sulphur), residues of this heat sink water will be found both "in" and "between" the resultant solid sulphur particles. By far the largest portion of the resulting water content will be in the inter-particle spaces and it is this water that has the most dramatic effect on the properties of the sulphur during storage, handling and transportation.

The second source of water is that applied either by Mother Nature in the form of rain (snow in some regions) or intentionally by humans in the process of controlling dust, odors or other fugitive emissions from the bulk commodity. Both are controllable to some extent.

In Chart 3 an attempt is made to tabulate the properties and practical behaviour of formed solid elemental sulphur as a function of its moisture content. As is seen, many of the factors are related as far as their practical consequences are concerned. "Too dry" and environmental friendliness and safety are compromised. "Too wet" and the too dry challenges are replaced by new ones such as:- Uncontrolled slurry product movement in storage, conveying and transportation: Increased corrosion and product contamination: Higher consumer's energy cost in drying the commodity. Conclusion? As far as water content is concerned there is a happy medium and it appears to lie somewhere in the 0.5% to 1.2% range.

ACIDITY

By far the bulk of the elemental sulphur commodity traded on today's international market ends up as feed stock for sulphuric acid manufacture. Yet premature conversion of the sulphur to sulphuric acid is distinctly undesirable. The common maximum specification for acidity of the bulk

Moisture Content	Handling Properties
0 to 0.5%	Too dry to minimize dust generation. Tends to create fines when extensively handled which become airborne as environmentally unfriendly and potentially explosive dust.
0.5 to 1.2%	Suggested ideal moisture content range. Moisture level suppresses fugitive dust, moderates bacterial action, maintains stability in bulk cargo movement. May avoid moisture content penalties if at low end of range (see contract terms).
1.2% to 2.0%	Becoming unnecessarily wet, encourages bacterial action, start of slurry flow behaviour in storage and transportation vessels, vessel corrosion enhanced if steel not protected.
2% to 3%	Considered very wet product. Likely wash off of lime used to protect ship steel against corrosion. Energy costs during remelt by user becoming excessive
3% to 6%	Excessive moisture content possibly attracting significant price penalties in addition to weight correction. Drainage from stock pile or shiphold may present challenges. Movement in shiphold notable. Almost certain limewash loss from steel surface and enhanced corrosion. Check chloride content for possible ingress of sea water.
> 6%	Product only acceptable under special circumstances Transportation may be restricted by local regulations.

commodity is 0.020% by weight stated as sulphuric acid relative to elemental sulphur. Freshly recovered solid elemental sulphur is seldom anywhere near this acidity level as it is produced and formed at the originating plant. But because of the ubiquitous presence of thiobaccilli in the environment, and particularly the one that oxidizes wet sulphur to sulphuric acid (thiooxidans), elemental sulphur is slowly converted in storage and transportation to acid.

This bio-oxidation can be mitigated to a considerable extent by treatment of the sulphur with biocide (e.g. sodium lauryl sulfate - SLS) at application levels that do not infringe upon the 250 ppmw maximum permitted carbon (organic) contamination level. This practice, introduced at Vancouver terminals in Canada in the 1990's is now being widely adopted with considerable success. One disadvantage of SLS is that it must be water soluble to be effective. As it is water soluble, there is likely to be significant wash out when moisture content is high rendering its effectiveness less than optimal. Hence unnecessarily wet bulk sulfur cargoes may turn out to have higher acidities if they are not well drained.

Corrosion of both steel and Portland Cement Concrete retaining structures are undesirable consequences of high acid contamination. Interestingly, Sulphur Cement is not attacked by sulphuric acid, but it has not been widely accepted as a structural material for use with bulk sulphur storage and handling! Why? Ask the civil engineers.

CHLORIDE

The obvious source of this contaminant is the sea and oceans over which millions of tones of the sulphur commodity travel annually. The importance of assuring that bulk carrier holds have tight hatch covers is obvious. This has not always been the case and trying to resell sulphur with 100 ppmw + of chloride is not an easy task!

Why? Acid manufacturers who use vanadium based catalysts to oxidize sulphur dioxide to the acid trioxide are not lovers of chloride contaminated sulphur. Once chloride is in their system it can react with the vanadium to produce volatile vanadium oxychlorides which are lost to atmosphere. Not only are these catalyst losses expensive in terms of replacement costs but vanadium is classed as a toxic heavy metal and emissions are subject to strict regulation in many jurisdictions. The environmental engine at work again!

It is worth noting that in regions where sweet water is at a premium and desalination is common, care should be taken to insure that partially desalinated process water is not the source of choice in sulphur processing. This is especially true if the sulphur forming process is a wet form method since saline water can be trapped within the sulphur particulate adding to the chloride content of the product sulphur.

A maximum permitted value for chloride is not shown in Chart 1 because there is little agreement in the industry as to whether this contaminant should even be mentioned in the purity specification tables. Cases have been reported of sulphur cargoes with chloride in excess of 100 ppmw chloride contamination being refused on delivery. Cargoes at or near 50 ppmw have been accepted but have been the subject of subsequent extended "negotiations" as to appropriate purity penalty discounts. But it is a bit unreasonable to expect that a bulk marine carrier sailing on water with over 18,000 ppmw chloride in it can deliver a bulk cargo with much less than 20 ppmw chloride!

SWELLING CLAY CONTAMINATION

This contaminant is included in the hope that one day soon some of the less "premium sulphur" cargoes may find their final use in sulphur based construction materials. The late Dr. Alan Vroom, who spoke at meetings of this group on his favorite topic of sulphur concrete, demonstrated that swelling clay contaminants in "not so clean" sulphur are not acceptable contaminants if the end use is in the manufacture of sulphur concrete. This is because, once wetted, the swelling clay does what it is expected to do when wetted - expand and crack the matrix in which it is lodged. Not a good thing for a load bearing concrete - in any quantity.

Since "off-spec" bulk sulphur will inevitably appear on the market - everybody's housekeeping is not that good - checking for the presence of swelling clay is a must if the end use is a construction material.

POLYMER CONTENT

The thermodynamically stable form of sulphur is a small stable crown shaped ring of eight sulphur atoms called cyclooctasulphur. But when melted into its liquid form and further heated, as has been the thermal history of most elemental sulphur, the ring opens and groups of eight sulphur atoms combine together to form long chain polymers (S_x).

Although this phenomenon is thermally reversible, even solid elemental sulphur of considerable age since being solidified will still contain some residual polymeric material. So, who cares? Rubber makers and pharmaceutical manufactures care and they are probably among the most demanding buyers of sulphur as far as purity is concerned.

Rubber makers use elemental sulphur in vulcanization (a form of polymer cross linking) and they are quite particular about the percentage of polymeric sulphur that may be present in their supply. They, and the pharmaceutical users have a habit of grinding solid elemental sulphur into very fine powders and that grinding process can be very sensitive to the tendency of sulphur to agglomerate

or cake on the internals of the grinding device in use. Polymer content of elemental sulphur can affect this behaviour.

How easy is it to measure the polymer content? Easy. It is not soluble in carbon disulfide while most other forms of sulfur are soluble. Just be careful with the carbon disulphide. It is VERY flammable.

CONCLUSIONS

Despite the very large tonnages of commodity elemental sulphur that are traded annually, in bulk, world wide, its elemental purity is among the highest of any material in commerce. As the commodity enters yet another "age of plenty" buyers will look to find a supply with purity specifications that minimize their risk and optimize smooth operation at their user end of the line. Much is known and understood about the effects of impurities on the properties of elemental sulphur and its uses. It behooves the industry to be vigilant in keeping the reputation of bulk elemental sulphur "clean" as far as meeting stated purity specifications is concerned.

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GSS EXHIBIT 3-B

Article: Sulphur Magazine (Number 356, January/February 2015)

Number 356

January | February 2015

SULPHUR

www.sulphurmagazine.com

Refinery sulphur

Sulphur quality specifications

Analysers and SRU control

Sulphuric acid catalysts



Table 3: Effect of moisture content on sulphur handling properties

Moisture content	Handling properties
0 – 0.5%	Too dry to minimise dust generation. Tends to create fines when extensively handled which become airborne as environmentally unfriendly and potentially explosive dust.
0.5 – 1.2%	Suggested ideal moisture content range. Moisture level suppresses fugitive dust, moderates bacterial action, maintains stability in bulk cargo movement. May avoid moisture content penalties if at low end of range.
1.2 – 2.0%	Becoming unnecessarily wet. Encourages bacterial action. Start of slurry flow behaviour in storage and transportation vessels. Vessel corrosion enhanced if steel not protected.
2.0 – 3.0%	Considered very wet product. Will likely wash off lime used to protect ship steel against corrosion. Energy costs during re-melt by user becoming excessive.
3.0 – 6.0%	Excessive moisture content possibly attracting significant price penalties in addition to weight correction. Drainage from stockpile or ship hold may present challenges. Movement in ship hold notable. Almost certain loss of lime wash from steel surface and enhanced corrosion. Check chloride content for possible ingress of sea water.
>6%	Product only acceptable under special circumstances. Transportation may be restricted by local regulations.

Source: Lang and Hyne, 2005

Table 4: Illustrative purchase specifications for formed sulphur

Specification 1:	
Purity (on a dry basis)	99% minimum
Carbon	0.025% maximum
Ash	0.05% maximum
Arsenic	Commercially free
Selenium	Commercially free
Tellurium	Commercially free
Moisture	Moisture >0.5% shall be deducted from from Bill of Lading for invoicing purposes.
Specification 2:	
Purity (on a dry basis)	99.8% minimum
Carbon	0.025% maximum
Ash	0.05% maximum
Arsenic	1 ppm maximum (commercially free)
Selenium	1 ppm maximum (commercially free)
Tellurium	1 ppm maximum (commercially free)
Acidity	Typically 0.02% maximum
Moisture	Typically 0% to 3.0% maximum
Specification 3:	
Colour	Bright yellow
Purity	>99.9% minimum
Organic matter	<0.02% maximum
Ash	<0.015% maximum
Arsenic	<1ppm
Selenium	<1ppm
Tellurium	<1ppm
Acidity	<0.007% H ₂ SO ₄
Moisture content	<0.50%
Particle size:	
>6mm	<5%
1-6mm	>90%
<0.5mm	<0.5%

Source: J. Macdonald, private correspondence, Sandvik Process Systems[®].

fies[®]. When the inner liquid sulphur solidifies it shrinks. This means that a small generally spherical droplet of liquid sulphur solidifies into a generally spherical solid particle with internal voids caused by the shrinkage. These voids can be readily seen in the liquid drop formed sulphur particulate whether it be dry or wet formed and increases the susceptibility of the form to breakage and crushing under pressure. In addition, since the interior cools more slowly (sulphur is a poor conductor of heat) its crystal structure is larger and less well packed, making breakdown to form dust easier if the particle is broken and its interior exposed. Sulphur formers like Enersul have worked hard to overcome this issue via their forming techniques, many of which now rely on building up a sulphur particle in layers to counteract this tendency, and/or paying very careful attention to temperature

control during the process. The result is the excellent formed particles now produced by modern sulphur forming equipment.

However, what many in the industry may not realise is that sulphur producers and sulphur traders/buyers often work with two separate sets of specifications when dealing with the product itself. While producers pay close attention to the SUDIC specification, the purchase specifications may be very different, and tends to focus on purity – especially content of heavy metals like arsenic and selenium, which may render any fertilizer produced unusable. Typical examples are given in Table 4. From this it can be seen that a gap in product quality specifications now appears; there is no mention in the first two sales specifications of particle size distribution, friability, etc. The irony is that the companies that own oil and gas pro-

cessing complexes may spend millions of dollars installing and operating equipment to meet one specification, while the sellers (perhaps often within their own company) and buyers spend millions of dollars on product that must meet a completely different specification criteria. This results in a gap between what a buyer knows about the producer's production operation and what quality of product is ultimately arriving at his company's port of discharge.

There are signs, however, that this may be changing. The third specification, from a major European trader, does quote figures for particle size distribution. In their Sulphur Forming Workshop at the 2014 Sulphur Conference[®], Sandvik Process Systems argued that there is a "growing awareness" amongst large volume sulphur buyers in addressing these issues with their suppliers, and that as a result, the importance of physical prop-

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GSS EXHIBIT 3-C

Article: Sulphur Magazine (Number 343, November/December 2012)

Number 343

November | December 2012

SULPHUR



Sulphur in the desert

SO₂ emissions regulation

North America's changing sulphur balance

eliminated the process conditions which, with previous versions of the process, led to potential accumulations of sulphur throughout the process, requiring a shutdown for cleaning and inspection every shift.

The external seed generation system also eliminated the need for screen separators and multiple conveyors. The Brimrock granulator has one conveyor – for collecting and transferring the product.

One of the key components of the Brimrock unit is the air and particulate emission scrubbing system integrated into the process. As process air and moisture exits the drum it is captured and treated within the scrubbing skid. This simple system eliminates sulphur dust and vapours thus making the process much safer for operators and the surrounding environment.

Woven through the above discussion of HSE design factors has been the theme of both process innovation (external seed generation), profile reduction, modular skid development and system integration (piping, E & I).

The development team's experience in the international sulphur forming markets allowed it to approach the new design from the client's point of view. It thus became critical to ensure that only those components proven in severe sulphur service were used in the overall process.

Special care was afforded to how piping and electrical runs were designed and mounted without having them interfere with the structural design. Stainless components, including the drum, top of the line pumps and valves, steam jacketing piping, specially developed paint systems all combined to ensure the client that lower overall equipment costs did not translate to any compromises on quality.

The development team designed the new RS1500™ granulator (Fig. 2) how they would want one if it belonged to Brimrock. As the newest entry into the international sulphur forming equipment market it was important that the technology not only be HSE compliant, but also cost competitive against its competitors while maintaining the highest quality standards for sulphur service.

Devco sulphur technology

Over the past thirty years Devco has been involved in the processing, handling and marketing of sulphur throughout the world. The result has been the development of extremely economical, dependable and easy to operate facilities converting mol-

ten sulphur into solid sulphur prills plus conveying, storage and truck/ship loading systems.

Some of the largest operating facilities in the world today use Devco's technology including Jubail in KSA (10,500 t/d) and Puguang in China (8,640 t/d).

Devco's engineers have listened to operators, customers and the sulphur markets to continuously refine the forming technology resulting in the latest plant technology called the Devco II process. These sulphur forming facilities and their product, plus downstream handling systems meet the most rigid environmental and safety requirements while delivering a much lower total cost of ownership than any alternative technology.

Devco prilling process

The sulphur supplied at Devco's battery limits flows through steam jacketed piping to the top of the prilling tower where it is dispersed evenly onto heated forming trays mounted above the forming tank. The trays are designed with a predetermined number of holes of a specific diameter making up the floor of the trays, through which the feedstock flows in continuous fine streams into the water below.

As the sulphur flowing through the trays falls into the water in the forming tank, small droplets are formed and the outer surface forms a crust as it quickly solidifies in the water. As the prills drop through the water and are cooled, they are annealed into hard and smooth-surfaced prills producing a premium grade product (GB/T 2449-2006 China National Standard, Sulphur for Industrial Use) by the time they reach the conical bottom of the forming tank.

Water flow in the forming tank is countercurrent to the descending droplets, allowing cooler water entering the tank to slowly anneal the prills, which is critical to the formation of hard-surfaced prills, making them more resistant to abrasion and crushing in future handling. The water level is maintained by overflow weirs. Circulating water enters the forming tank at four injection points located about one metre from the discharge of the tank. The formed prills collect in the conical bottom of the forming tank where the level of prills is maintained by a level control valve located at the discharge of the forming tank. Load cells monitor the prill level in the forming tank and actuate the level control valve to maintain the desired level.

Prills exiting the forming tank are accompanied with some water, which is separated by a dewatering screen to produce a moisture-enhanced product. Prills flow from the dewatering screen onto a product belt conveyor that transports them to storage. Water passing through the vibrating dewatering screen flows to the warm water sump section of the process water sump where it is combined with the water coming from the overflow weirs at the top of the forming tank. The water collected in the sump is first pumped by the hydrocyclone feed pump through the hydrocyclones to remove small particles produced in the forming process (called fines) and back to the clarified water sump. Total fines production is less than 1%.

The warm clean water (fines removed) is then pumped from the clarified water sump to the inlet of the cooling water tower and the cooled water is returned to the cool process water sump. The cooled water is then pumped by the forming tank feed pump back to the forming tank. Makeup water on level control maintains the desired level in the sump chambers, compensating for losses due to moisture remaining on the prills and evaporation. **The sulphur prills leaving the forming unit retain on average 1.5-2.0% moisture by weight.**

Fines produced in the hydrocyclone are then discharged to the vibrating dewatering screen and go out with the final product. **Operation of Devco's forming unit is free of sulphur dust due to the optimum moisture content,** but when the hot feedstock is distributed on the forming trays, any gases inherent in the feedstock will be partially released along with a small quantity of sulphur vapour. These gases are collected by an enclosed fume hood fitted over the distribution system on the top of the forming tank and discharged by a fume blower to atmosphere.

Figure 3 shows a process flow diagram of the Devco II process.

Devco II process advantages

Total lifecycle cost

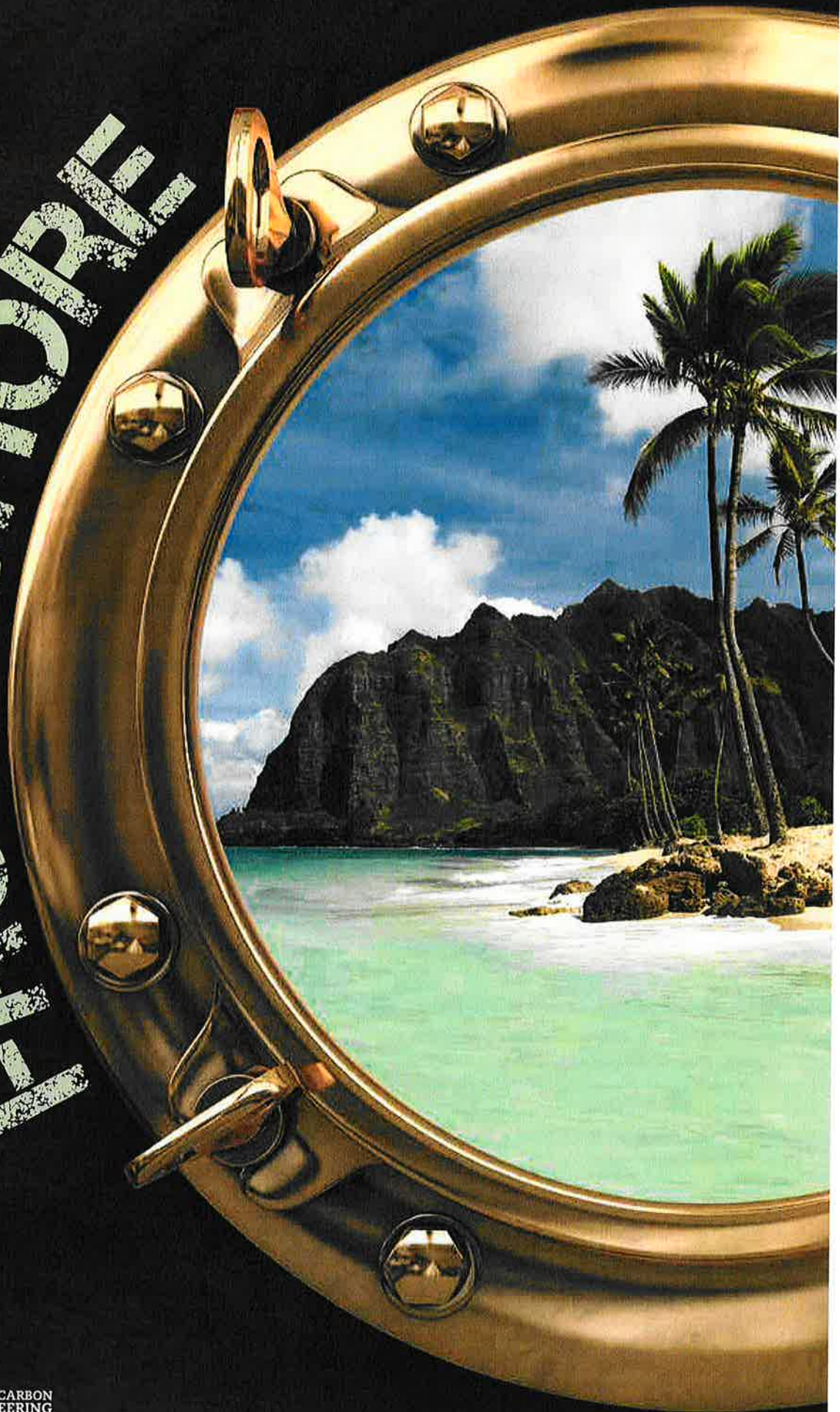
The Devco II sulphur forming technology offers the lowest capital and operating costs compared to any other sulphur forming technology. Further, a Devco unit offers excellent economies of scale since it takes two to six alternative units (depending on technology) to match the output of a single Devco II unit, which has a capacity of 2,000 to 2,250 t/d. These economies of scale also allow a unit to be sized so that

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Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 3-D

Article: Hydrocarbon Engineering (December 2013)

FROM SHIP TO SHORE





**UDAY N. PAREKH AND
BEVAN HOUSTON,
DEVCO, USA,**

**LOOK AT SULFUR
RECOVERY TO
SHIP LOADING
TECHNOLOGIES
THAT ARE
CLEAN,
ECONOMIC
AND SAFE.**

**TO
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An important step in oil and gas processing as well as coal gasification is the removal of the sulfur contained in the fossil fuel so as to produce clean burning end products with minimal impact on the environment. The key goal of the enterprises engaged in these activities with respect to sulfur removal is that it be done effectively, cleanly, safely and reliably and that the sulfur be dispatched without impacting the main operation of the facility. This is understandable viewed through the prism of sulfur being a byproduct/waste product of the energy industry. However, on the receiving end at the consuming industries sulfur enjoys some of the sheen of a precious metal of the same colour as it constitutes a vital feedstock for the manufacture of sulfuric acid and fertilisers necessary to feed the world's seven billion.

This article highlights three proven technologies that radically improve the environmental, safety and reliability attributes of sulfur recovery and handling operations:

- COPE technology. Increase capacity and improve environmental performance of the sulfur recovery unit (SRU).
- D'GAASS technology. Safe and efficient removal of dangerous H₂S from liquid sulfur.
- Devco II Forming. Safe and reliable conversion of liquid sulfur to solid sulfur for safe handling, storage and transportation through the long supply chain.

This article also speaks of the significantly changing dynamics in the sulfur markets. These include the emergence of new geographies which will be introducing significant new volumes of sulfur to the world markets as well as other large contributions to sulfur supply from new projects in the Middle East. All of this will exert pressure on current and new producers of sulfur, as demand will fail to keep up with this additional supply. The safe and cost effective operation of a energy

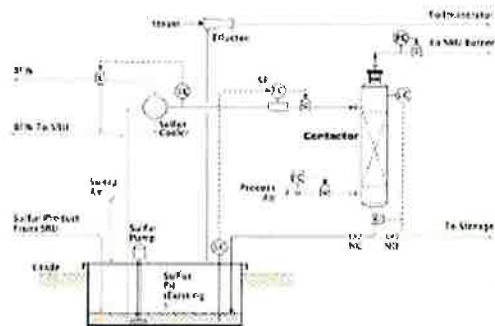


Figure 4. Typical D'GAASS flow diagram.



Figure 5. Key sulfur trade routes (>50% of sulfur produced).

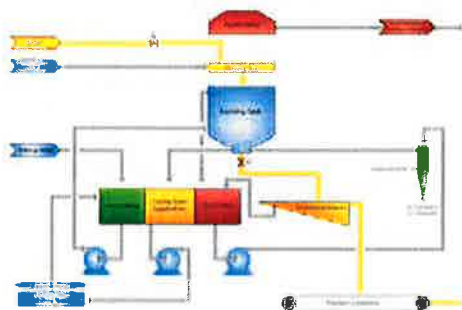


Figure 6. Devco II flow diagram.

smooth surfaced prills producing a premium grade product (GB/T 2449-2006 China National Standard, sulfur for industrial use) by the time they reach the conical bottom of the forming tank. Water flow in the forming tank is countercurrent to the descending droplets, allowing cooler water entering the tank to slowly anneal the prills, which is critical to the formation of hard surfaced prills, making them more resistant to abrasion and crushing in future handling. The water level is maintained by overflow weirs. The formed prills collect in the conical bottom of the forming tank where the level of prills is maintained by a level control valve located at the discharge of the forming tank

Prills exiting in the forming tank are accompanied by some water, which is separated by the dewatering screens to produce a moisture enhanced product. Prills flow from the dewatering screens onto a product belt conveyor that transports them to storage.

The water side of the process includes two loops for the clarification and cooling of the process water. The first loop pumps warm water from the tank that collects the water from the dewatering screens and the overflow weirs to hydrocyclones where the sulfur fines are removed before the water flows to a clarified water tank. In the second loop water from the clarified water tank is pumped to a cooling water tower and from there to the clean cool water tank where it is now ready for reuse. This clean cool water is then pumped back to the forming tank with makeup water to compensate for the water in the formed sulfur product and evaporation losses.

Operation of Devco's forming unit is free of sulfur dust, but when the hot feedstock is distributed on the forming trays, any gases inherent in the feedstock will be partially released along with a small quantity of sulfur vapour. These gases are collected by an enclosed granulated unit fume hood fitted over the distribution system on the top of the forming tank and discharged by a fume blower to atmosphere.

Key advantages of the Devco II forming process include:

- Lowest capital cost among all forming technologies. Also, very good economics of scale as 2 – 6 trains of alternate technologies are required to match the capacity of a 2000+ tpd Devco system.
- Lowest operation, utility and maintenance cost because of gravity driven process flow and least number of moving parts.
- Safest technology in the industry due to optimal moisture content leading to no dust or fires during conveying, storage, loading and unloading in any climate. More information is provided below on this vital feature.
- Proven marketability with 30+ years of operation and product that meets the specification of the world's largest sulfur market.
- Smallest footprint.

Optimal moisture content in formed sulfur

A key distinguishing feature of Devco's prilling process over pastillation and granulation based forming technologies is the moisture content in the formed sulfur. The Devco II formed process produces a formed product with an optimal moisture content of 1.5 - 2 % as opposed to a dry product produced by the other technologies. This leads to a product that is extremely safe for conveying, storage, loading, transport and unloading without the inherent risks of fire and explosions that occur due to sulfur dust from dry sulfur processes across the long supply chain. Figure 7 shows a Devco II plant which has been operating for decades in one of the most stringent emission controlled regions of the world.

This section dispels some of the myths and concerns about the Devco product versus dry formed sulfur from pastillation and granulation processes so as to provide end users as well as EPCs the benefit of considering all technologies when evaluating their forming options.

Dry sulfur is not really dry

Alternate technologies produce a 'dry' product but since this product poses a very big safety risk because of the sulfur dust generated, the sulfur formed by these technologies is routinely doused with water/dust suppressant at various stages of conveying, storage and loading. The irony is that this product can end up with 3 - 5% moisture by the time it is loaded with the attendant problems of truck, rail and ship corrosion. The Devco

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GSS EXHIBIT 3-E

Devco USA, LLC - Operations and Maintenance Manual

OPERATIONS & MAINTENANCE MANUAL

**For One 2,000 Metric Tons per day
DEVCO II SULFUR FORMING UNITS
DEVCO II**

**SAVAGE SERVICES MIDWEST
FORMING FACILITY CHICAGO,
IL**



**2011
DEVCO USA, LLC
Tulsa, OK**

HISTORY OF THE PROCESS

DEVCO USA, LLC (DEVCO) is pleased to present a DEVCO II Sulfur Forming Unit for Midwest Forming Facility. DEVCO's facility is for a design capacity of 90 metric tons per hour. This capacity has been selected to allow operation for 24 hours per day, 7 days per week to obtain maximum flexibility and minimal operating costs. DEVCO's affiliated companies in California have operated on this schedule for over 30 years, which allows routine preventive maintenance and daily wash down of the units to keep them with an available on-stream efficiency of over 99%.

DEVCO has handled projects of varying magnitudes as outlined in this section. This sulfur forming facility, designed and supplied by DEVCO, has been built for both domestic and overseas installation. In addition to the projects listed, DEVCO has supplied forming units for the Petroleum Company of Trinidad & Tobago for the Pointe-A-Pierre Refinery in Trinidad, West Indies; Star Petroleum Refining Company located at Map Ta Phut, Thailand; Zhongyuan Puguang Natural Gas Purification Unit, Sichuan Province, China. The units have been commissioned and passed all performance tests.

DEVCO's involvement in forming sulfur began in the late 1970's when DEVCO extensively investigated various sulfur purification and forming techniques and processes. At the conclusion of this study, DEVCO selected the modified Fletcher sulfur forming process as the best design to use in the first of several processing facilities, and has since further developed this sulfur forming process.

In 1979/1980, when DEVCO was searching worldwide for the best approach to forming liquid sulfur into solid prills, or granules, a decision was made against a dry process due to industry experience in Canada where sulfur dust explosions had occurred. Sulfur dust falling through air with low humidity conditions will create a static electricity discharge sufficient to cause auto-ignition and explosion, which happened at ARAMCO's Polish Prill Dry Plant (150 million USD complex).

DEVCO determined that a wet forming process – using water to form sulfur prills – was the safest process and produces a product, which has been accepted by consumers around the world as the

standard of commercial supply. DEVCO also recommends storage of formed sulfur in an open storage area based upon its experience in all types of climates. A concern about the potential problem of stockpiles of sulfur prills being contaminated from blowing dust, rainfall, and migration in high winds has proven to be unfounded. DEVCO has stored sulfur outside at all its operating facilities in extreme variations in climate, rainfall and temperatures without any affect on the quality of the product sulfur prills.

Since 1980 DEVCO has been involved in the design, supply and construction of forming facilities, as well as processing, handling, and marketing of formed sulfur in various regions of the world. This experience has developed into an extensive wealth of knowledge and expertise in all facets of the industry. DEVCO has optimized the processing of sulfur into prills, meeting the exacting requirements of its customers while adhering to rigid environmental and safety standards. DEVCO's expertise also includes the design, construction, and operation of facilities to purify contaminated sulfur.

DEVCO has successfully completed sulfur-forming facilities with a combined daily production capacity of 31,500 metric tons prior to the MMFF. The addition of the Devco II units in Chicago will result in over 33,500 MTPD of sulphur that can be processed through Devco's original and new generation Devco II units. In addition, DEVCO has supplied forming units to Coastal Aruba, Petroleum Company of Trinidad & Tobago and Star Petroleum Refining Company. Due to the increase in sulfur production in various areas of the world requiring sulfur forming facilities, DEVCO has been active in submitting proposals to potential clients for forming facilities, which vary from FAS-Houston sales to turnkey contracts or owner/operator/marketer contracts, whichever the client desires.

DEVCO designed, built and operated two sulfur forming units at Shedgum, Saudi Arabia, from February 1981 through June 1984, then moved them to Berri, Saudi Arabia, where DEVCO installed and operated them from November 1984 until late 1986. In 1986, DEVCO designed, supplied and built three forming units for ARAMCO as part of a sulfur forming facility DEVCO erected at the King Fahd Industrial Port of Jubail at Jubail, Saudi Arabia. This latter facility was designed to process 4,500 metric tons per day of liquid sulfur and has operated at rates in excess of 6,000 metric tons per day. Therefore, total combined production rate is 10,500 MTD.

DEVCO's business is the design, supply, construction, and operation of sulfur forming facilities and the sale of formed sulfur in the world market. It has total in-house knowledge and competency in the design, supply, construction, and operation of sulfur forming facilities, as well as marketing of the product. Thus, the client can be assured that its project will be carried out in an efficient and competent manner. Under the direction of DEVCO, a joint task force of key personnel from DEVCO has been set up utilizing their engineering and drafting services in combination with competent local companies to carry out detailed engineering and drafting, on an "as needed" basis. Construction of sulfur forming facilities supplied by DEVCO may be erected by DEVCO, or through the services of a subcontractor, depending upon location and site conditions. The organization to provide the required services represents a team approach that reflects the appropriate combination of personnel and "know-how" to optimize the effectiveness of carrying out the project and providing the owner on-going technical and operational assistance.

Based upon many years of operating experience in various climatic conditions, DEVCO has perfected sulfur-forming units designed to handle throughputs ranging from 100 to 2,000 metric tons per day each. One of the major benefits of our forming systems is that the process operates as efficiently at low rates as it will at high rates with very little effect on variable operating costs. This is accomplished with minimal incremental capital cost, and sulfur forming rate changes can be attained within a matter of minutes.

It is important that our formed product is produced with up to 2.0% water mechanically adhering to the surface. While this percentage decreases somewhat during storage, enough water remains on the prills to prevent dust from occurring during storage, handling, and loading of ships. It is the dust-free feature of our process that allows DEVCO forming units to operate, whether in Los Angeles or Saudi Arabia, with no air contamination or fear of fires or dust explosions. The forming unit will meet the most rigid air and water environmental standards.

The forming unit and its associated equipment are very reliable and flexible to operate with proper maintenance. Start-up of a unit can be accomplished within 5 minutes if the jacketed sulfur lines feeding the unit have been maintained at operating temperature. Rates can be varied quickly and routine operations can be established within minutes.

DEVCO is well aware that the prime responsibility of this sulfur forming facility is to make absolutely certain that sulfur supplied to MWFF's facility is always processed so there will never be an occasion of failure to perform. DEVCO's affiliated company, California Sulphur Company (a former DEVCO company), takes sulfur from 13 refineries in California and in 30 years of operation have never failed to perform. DEVCO takes advantage of its experience in California using a "belt and suspenders" philosophy in the design and operating procedures of its facilities to guarantee the same reliability exhibited by its affiliates. All critical mechanical equipment will be spared along with availability of a large supply of spare parts; plus an operations and maintenance training program which will ensure development of a dedicated cadre of well-trained, professional and motivated employees.

WET PRILL PROCESS DESCRIPTION

DEVCO has prepared this information based upon supplying one 2160 metric ton per day wet prilling units (90.0 metric tons per hour each). A Process Flow Diagram (370-PF-01) and Piping and Instrument Diagrams (370-MF-00 thru 370-MF-04) for the DEVCO II Forming Units are included in this package for reference. The following description refers to equipment and instruments identified by number and name as designated on the Process Flow Diagram.

Molten sulfur ("Feedstock") is pumped via a steam-jacketed pipeline provided by others. Molten sulphur exits the filters to one of two local molten sulphur storage tank (supplied by MWFF). The molten sulfur is then pumped via vertical sulfur pumps (supplied by DEVCO) directly to the Sulphur Forming Unit at a delivered pressure of approximately 36 psi. The feed pumps are capable of supplying the full design flow rate to the Forming Units (SFU-100), and able to be throttled down to minimum demand.

The feedstock from local sulfur tank TP-101 is pumped to the Forming Unit SFU-100. Sulphur from the tank is pumped to the top of the Unit where the flow is controlled through FV-101 to the Forming trays. The Feedstock flows through the 3" plug valve, used to provide equal amounts of sulphur to each of the Forming trays. Sulphur from the valves enters the Forming Tray Distributor (FTD-100A/B) that is designed to disperse the feedstock evenly onto steam heated Forming Trays (FT-100A/B) mounted on the Forming Tray Support (FTS-101) and above the Forming Tank (TF-100) which is full of process water. The trays are designed with a predetermined number of holes of a specific diameter making up the floor of the trays, through which the feedstock flows in continuous fine streams of droplets into the water below. The trays have sidewalls and the depth of the Feedstock in the tray creates a hydraulic head, which controls the rate at which prills are produced. Thermocouples are located on the sidewall of the trays to monitor the heat of the Feedstock in the tray and act as a high level switch which shuts off the flow of feedstock to the Prilling Unit if the level gets too high. Note that while the operation of the prilling unit is very simple and easily controlled, in case of any operating problem, the immediate solution is to stop the flow of molten sulfur Feedstock to the Prilling Units by closing FV-101 and stopping the molten sulfur feed pump. All other flows can be monitored and changed or stopped within a reasonable time manually; therefore the instrumentation does not require sequencing for

automatic shutdowns. Following the shutdown of molten sulfur supply to the unit, the forming tank level control should be allowed to transfer the sulfur prills from the forming tank to the dewatering screens, then on to the conveyor. It is also important to allow the sulphur pumps to recycle molten sulphur back to the local pit or stop the pumps.

As the feedstock flowing through the trays falls into the water in the forming tanks, small droplets are formed due to the surface tension of the feedstock, and the outer surface forms a crust as it quickly solidifies in the water. The inner portion of the droplet cools more slowly due to the insulating quality of the feedstock. As the molten interior of the essentially spherical prill starts to cool and shrink, a small dimple or indentation appears on the surface. As the prills descend through the water and are cooled, they are annealed into relatively hard- and smooth-surfaced prills producing a premium grade product by the time they reach the conical bottom of the forming tank.

Water flow in the forming tanks is countercurrent to the descending droplets, allowing cooler water entering the tank to slowly anneal the prills, which is critical to the formation of hard-surfaced prills, making them more resistant to abrasion and crushing in future handling. The water level is maintained by overflow weirs which contain low level alarm and shutdown (LT-108). Circulating water enters the forming tanks at four injection points located about 3 feet from the discharge of the tanks.

The formed prills collect in the bottom of the forming tank where the level of prills are maintained by a level control valve (LV-105) located at the discharge of the forming tank. Load cells (LE-105 A/B/C/D) monitor the prill level in the forming tank and actuate the level control valves (though LIC-105) to maintain the desired level along with high level shutdown.

Prills exiting the forming tanks are accompanied with water, flow by gravity through the Sulfur Distributor (SD-220) before entering the vibrating Dewatering Screens (VS-200 and VS-210) to remove the excess water to produce a product that meets required moisture specifications. Prills flow from the Dewatering Screens through the Product Chute (SD-230) then onto a product belt conveyor supplied by others that transports them to the storage area.

Process water passing through the vibrating Dewatering Screens flows to the Warm Water Sump (TK-300), where it is combined with the water coming from the overflow of the Hydrocyclones (HC-300A/B). The water collected in the Warm Water Sump is pumped by the Hydrocyclone Feed Pump (P-300) through the Hydrocyclones to remove small particles produced in the forming process (called fines) and then back to the Clarified Water Sump (TK-310). The fines discharged by the Hydrocyclones are deposited into the Fines Hopper/Auger (SG-340), and then deposited into the Sulfur Product Chute (SD-230). Totals fines production is estimated to be less than 1% of throughput.

The hot clean water (fines removed) is then pumped from the Clarified Water Sump by the Cooling Tower Feed Pump (P-310) to the inlet of the water Cooling Tower (CWT-350). Water flows down the tower as air is forced by the Cooling Tower Fan (K-350) through the sides crosscurrent to the flow of water. The cooled water is returned to the Cool Process Water Sump (TK-320). The temperature of the water exiting the cooling tower is dependent on ambient air conditions but controlled by the speed of the Cooling Tower Fan speed. The cooled water is then pumped by the Forming Tank Feed Pump (P-320) back to the forming tank. The cooled water enters the forming tank at four different points in the lower section of the tank. Process water is allowed to constantly recycle through the system as described.

Makeup water enters through the level control valve (LCV-323) maintains the desired level in the Cool Process Water Sump, compensating for losses due to moisture remaining on the prills and evaporation in the Cooling Tower. The sulfur prills leaving the Prilling Units retain about 2% surface moisture by weight.

Operation of a DEVCO II Forming Unit is free of sulfur dust, but when the hot molten sulfur is distributed on the prilling trays, any gases inherent in the molten sulfur will be partially released along with a small quantity of sulfur vapor. These gases are collected by the enclosed sulfur forming Unit Fume Hood (FH-100) fitted over the molten sulfur distribution system on the top of the forming tank. The exhaust from the Fume Hood is combined with exhaust from the Sulfur Fume Scrubber and forced to the Vent Stack by the Fume Blower (BL) and then to the atmosphere.

GENERAL SAFETY AND HANDLING INSTRUCTIONS

Molten sulfur may contain hydrogen sulfide, which is toxic even in low concentrations. The molten sulfur should contain less than 10 ppm of hydrogen sulfide if properly degassed at the sulfur recovery plant.

The incoming liquid sulfur entering the Sulfur Forming Unit should have the approximate composition as shown below and be commercially free from arsenic, selenium and tellurium (3 ppm).

Sulfur	99.90% minimum	99.90%
Ash	00.05% maximum	00.05%
Carbon	00.05% maximum	00.05%
H ₂ S	10 ppm (nominal)	10 ppm

The molten sulfur should be routinely analyzed to verify the sulfur is being properly degassed to remove hydrogen sulfide. Hydrocarbons in the sulfur will be readily apparent since they will discolor the sulfur from a bright yellow to a dark mahogany, depending upon the concentration. Since hydrogen sulfide is a very toxic gas, it constitutes the primary potential hazard; an approved breathing apparatus must be readily available if there is a danger of exposure to even low concentrations of hydrogen sulfide.

Sulfur is virtually nontoxic. There is no evidence that systemic poisoning results from the inhalation of sulfur dust. However, sulfur will irritate the inner surfaces of the eyelids and cause extreme discomfort until the eyes are washed with water. Sulfur dust can irritate the skin on some people. When sulfur burns with air, it forms sulfur dioxide. Where sulfur is handled in enclosed areas, approved breathing apparatus or masks should be provided for emergency use in case of fire. Ignition of sulfur-impregnated clothing can result in very serious burns, therefore proper housecleaning and a frequent change of clothing is recommended. Use of flame-retardant clothing is recommended.

Hazard Control

Even though sulfur storage and handling is outside of DEVCO's scope, we offer the following for MWFF consideration. The stockpiling of sulfur granules at the MWFF takes place in the open air, silos or bagging. Water adhering to the surface of the sulfur granules when over 1.5% is normally sufficient to prevent any formation of sulfur dust except that which is formed when sulfur prills are crushed by mechanical equipment in the storage area. With repeated traffic over these crushed prills on a hot, dry and windy day, sulfur dust can become a nuisance; however, it is controlled easily by wetting down the storage area surface or sweeping the sulfur dust and adding it to the product conveyors.

Thus, the chief problem of sulfur dust associated with the handling of bulk sulfur or dry formed sulfur is not normally encountered in the handling of wet formed sulfur. However, the following general safety and operating procedures applicable to the handling of dry bulk or dry formed sulfur are included in the event any potential situation cited is encountered.

Clouds of fine dust arising during the handling of solid dry bulk sulfur in enclosed or in semi-enclosed spaces are potentially dangerous; arrangements should be such that they will not come in contact with sources of ignition. Flames, smoking, matches or anything that could cause a spark should be prohibited in such areas. Repair work requiring open flame should be done with due precaution against ignition of dust. Sulfur ignites easily, and sources of ignition in the vicinity of sulfur during normal operations should be avoided.

It is recommended that spark-resistant tools be used wherever dry bulk sulfur is shoveled or otherwise moved by hand, particularly where the tools may come in contact with concrete, stone or steel.

Being a very poor conductor of electricity, dry sulfur in motion tends to develop charges of static electricity, and ignition of sulfur dust by static-caused sparks is not uncommon.

Sulfur may be ignited by frictional heat; for example, friction resulting from an improperly maintained belt conveyor, by sparks created when steel tools are used, or by bolts, nuts or other hard objects entering the conveying equipment.

If a sulfur fire should occur, it can be conveniently extinguished by carefully smothering it with sulfur. Sand or fine earth also can be used for smothering but should be used as a last resort since the soil will contaminate the sulfur.

Water is the most desired extinguishing agent, but should be used as a fine spray or fog. Avoid using a solid stream of water as it may impel clouds of sulfur dust into the air. Steam smothering can be used for extinguishing fires in small enclosures. Carbon dioxide fire extinguishers can also be used.

Fire should always be approached from the windward side unless the firefighter is equipped with an approved breathing apparatus.

Use carbon dioxide or dry chemical fire extinguishers for electrical, oil or lubricate fires. Disconnect electrical equipment at remote breakers if a fire occurs.

Operators of equipment handling molten sulfur should wear safety glasses with side shields, heat-resistant gloves and fire-retardant-treated coveralls. Coveralls should be without cuffs and high-top safety shoes should be worn. The trousers should be on the outside of the safety shoes tops, not tucked inside the shoe. This is to help prevent any spillage of hot liquid inside the shoe. When operators are engaged in making connections or other changes in molten sulfur piping, they should wear full-face shields in addition to safety glasses.

Sulfur dust is irritating to the eyes, more so to some people than others. Therefore dust-tight goggles should be available to those who require them or when specific eye hazards exist. Plastic goggles are recommended since metal bands may cause skin irritation.

Some people find that breathing sulfur dust is mildly irritating; simple respirators should be available for those needing them.

“Hard hats” should be worn at all times for protection from falling objects, dust or splashes.

Safety shoes with nonskid soles should be worn. Spills of molten sulfur, sulfur prills, process water or wash down water should be cleaned up as soon as practical. Good housekeeping of the plant area will minimize slips, falls and other accidents.

Only qualified personnel should perform equipment repair, after review and approval by plant engineers and an authorized person has issued a work permit. Work involving electrical equipment or electrical driven equipment should be under the same review and approval and include proper de-energizing, lock out and tagging.

Sulfur presents no serious industrial health hazard if workers are adequately instructed and supervised in proper means of handling sulfur and in operating and maintaining the facility. Under normal operating conditions, a very small amount of sulfur volatilizes from the process unit sulfur trays and can precipitate on the inner surface of the fume hood. This small accumulation can be removed readily and completely in a 2-hour cleaning, once per week.

Some very small sulfur prills can spill off dewatering screens and conveyors. If dried and crushed, this material can produce small amounts of dust. A daily wash down and sweeping around the facility will remove this material.

First Aid

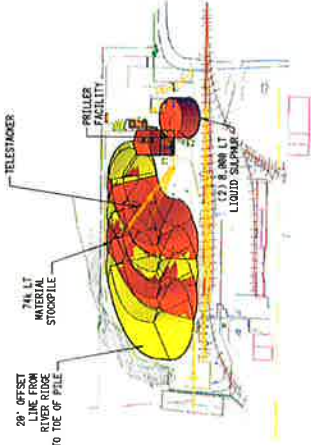
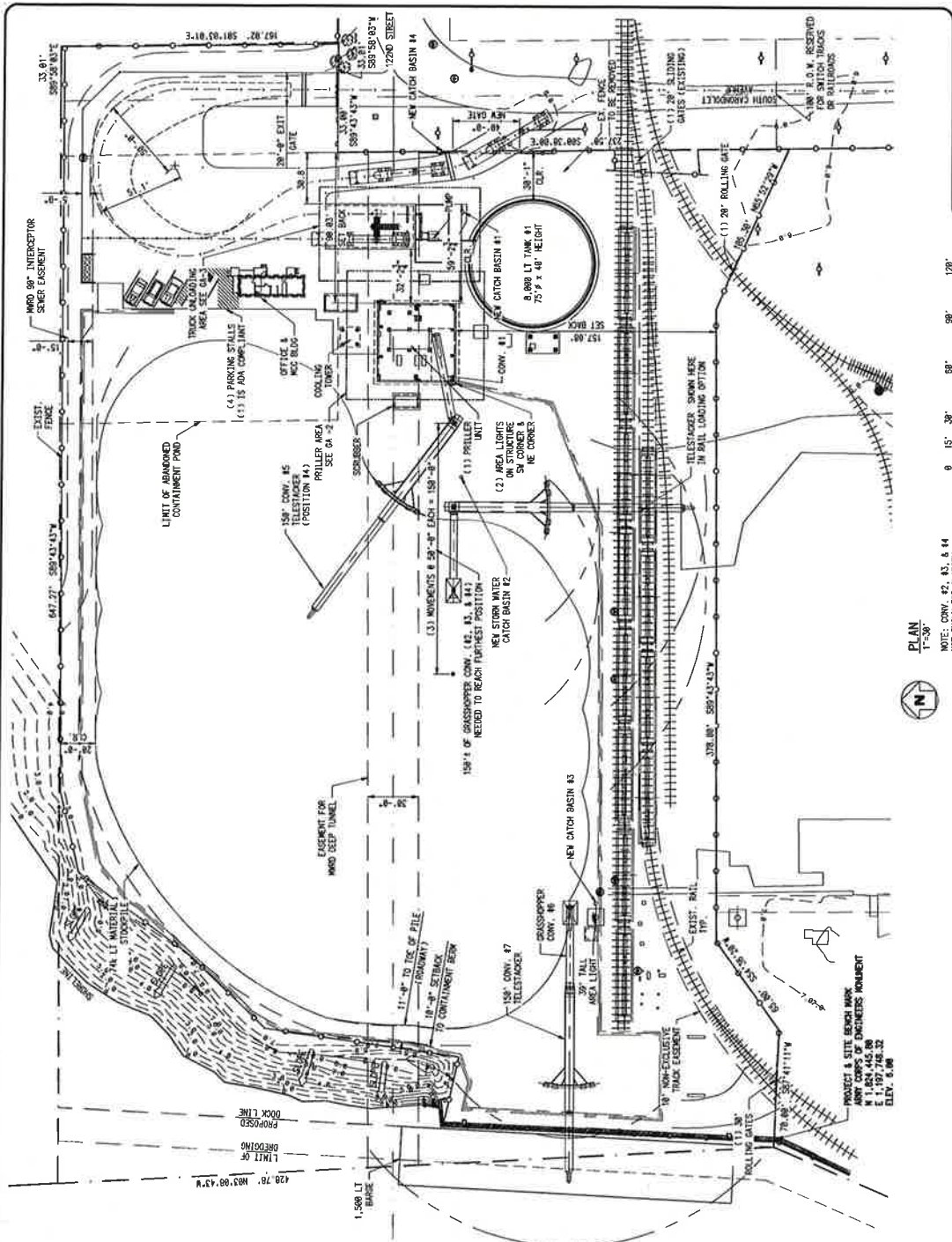
Simple first aid procedures are adequate. Unnecessary contact of sulfur dust with the skin should be avoided. Following the work period, sulfur dust should be removed by the use of mild soap and water. First aid for skin contact with molten sulfur, steam, hot condensate or hot water follows: Quench the burned area with continual liberal applications of potable water, ice or saline solution. Take the injured worker to a medical doctor, clinic or hospital as soon as possible.

If sulfur contacts the eyes, they should be irrigated with copious quantities of potable water or physiological saline. Irrigation must be painstaking and thorough. Inadequate amounts of irrigation fluid may actually increase the irritation. A shower and eye wash stall should be available to handle the above exposures.

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Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 5-A

IEPA approved permit drawings showing 42' stockpile



ISOMETRIC VIEW
N/S

- NOTES:
1. SURVEY INFORMATION FROM WILLIAM D. WER & ASSOC. SURVEY BOUNDS DATED: 05-21-10.
 2. PRILLER FACILITY DIMENSION PER DEVCO.
 3. ALL CONVEYORS ARE 36" U.M.O.
 4. TELESTACKER IS 15' HIGH.
 - A. STEEL FRAMED BUILDING
 - B. WHEEL TRAILER

LEGEND:

PILE	Indiv. Vol. (LT)	Σ Vol. (LT)
YELLOW	30,000	30,000
RED	14,300	44,200
YELLOW	14,100	58,300
RED	14,100	72,300
YELLOW	1,400	73,600



PLAN
1"=30'

NOTE: CONV. #3, #3 & #4
NOT SHOWN FOR CLARITY



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CHICAGO, IL
SAVAGE SERVICES CORPORATION

RISM
RISM ENGINEERING CONSULTANTS
RISM 1285 S. 417th ST. UNIT
CHICAGO, IL 60608-3418

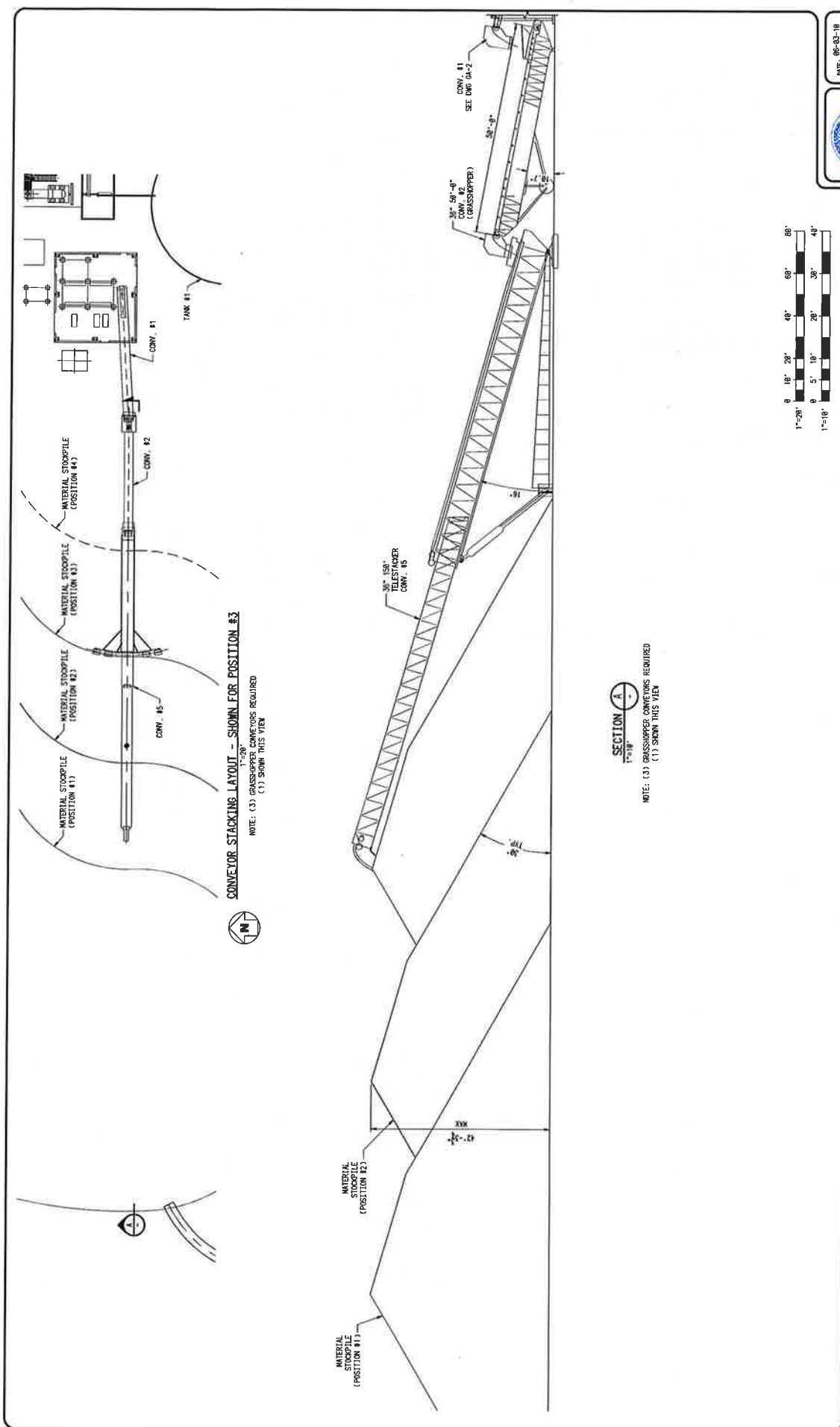
OVERALL SITE PLAN
& ISOMETRIC VIEW

DATE: 06-05-10	SCALE: 1"=30'	REV. NO.:	REV.:
R & H NO. 10881		GA-1	10



DESIGN	JSH
DRAWN	JSH
CHECK	NRD
APPROVED	

BY	DATE	REVISION



DATE	06-05-10
R & H NO.	10881
SCALE	AS SHOWN
TANK NO.	REV.
GA-4	10



**STACKING CONVEYOR
 PLAN & SECTION**

RISM
RISM ENGINEERING CONSULTANTS
 200 W. 1000 S.
 SALT LAKE CITY, UTAH
 801-733-5310

12200 So. CARONDOLET AVE.
 CHICAGO, IL
 SAVAGE SERVICES CORPORATION

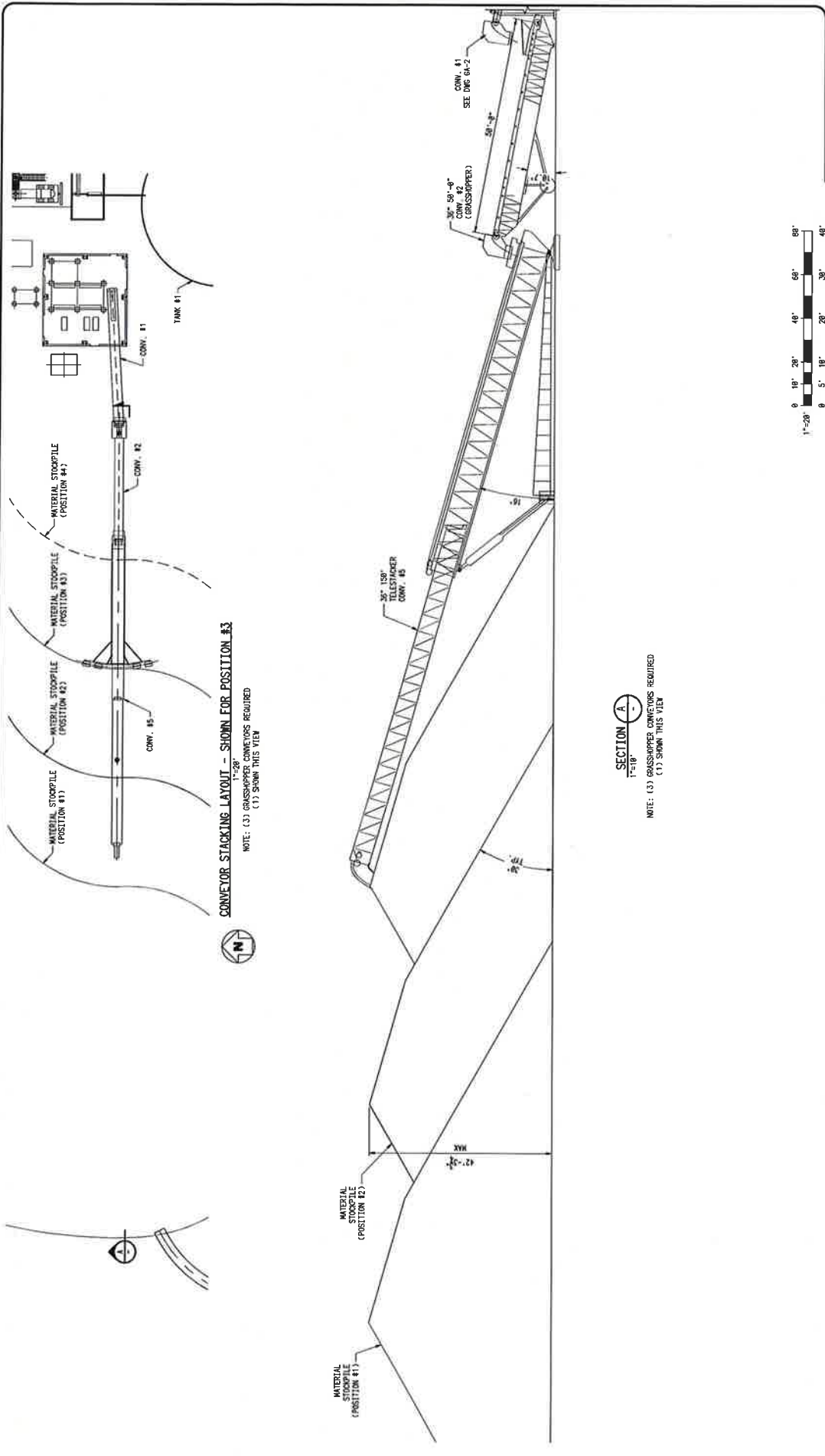
DESIGN	JSH
DRAWN	JSH
CHECK	MRD
APPROVED	

NO.	DATE	REVISION
1	04-12-11	RELEASED FOR CONSTRUCTION
2	04-20-11	ISSUED FOR PERMIT

12200 S. Carondolet Ave., Chicago, Illinois – Gulf Sulphur Services Ltd., LLLP
Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 5-B

City of Chicago approved permit drawings showing 42' stockpile



STACKING CONVEYOR
PLAN & SECTION

RISM
RISM ENGINEERING CONSULTANTS
2011 LAKE CITY, UTAH
(801) 225-3110

12200 So. CARONDOLET AVE.
CHICAGO, IL
SAVAGE SERVICES CORPORATION

DESIGN	JSH
DRAWN	JSH
CHECK	RD
APPROVED	

NO.	DATE	BY	APPROV.	REVISION
1	08-03-18			RELEASED FOR CONSTRUCTION
2	08-08-18			ISSUED FOR PERMIT

DATE: 08-03-18
R I S M No. 18801

SCALE: AS SHOWN

DATE: 08-03-18
SHEET NO. 10

84-12-2011
Exp. 11-30-2011

DEPARTMENT OF ENVIRONMENT
POLLUTION PREVENTION

NOV 16 2010

REVIEWED BY: T. PRUDINSKY

CONSTRUCTION & PERMITS
POLLUTION PREVENTION

12200 S. Carondelet Ave., Chicago, Illinois – Gulf Sulphur Services Ltd., LLLP
Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 5-C

Material Density Information

Solid	Density	
	(10 ³ kg/m ³)	(lb/ft ³)*
Paper	0.7 - 1.15	44 - 72
Paraffin	0.9	55
Peat blocks	0.85	52
Phenolic cast resin	1.24 - 1.32	
Phosphorbronze	8.8	
Phosphorus	1.82	
Pinchbeck	8.65	
Pitch	1.1	67
Pit coal	1.35	
Platinum	21.5	
Polyacrylonitrile	1.16 - 1.18	
Polycarbonates	1.2	
Polyethylene, PEH	0.91 - 0.97	
Polypropylene	0.9	
Polystyrene	1.03	
Polyurethane foam	0.03	
Porcelain	2.3 - 2.5	143 - 156
Porphyry	2.6 - 2.9	162 - 181
Potassium	0.86	
Pressed wood, pulp board	0.19	12
Polytetrafluoroethylene, PTFE, teflon	2.17	
Polyvinyl chloride, PVC	1.39	
Pyrite	4.9 - 5.1	309 - 318
Quartz	2.65	165
Radium	5	
Red lead	8.6 - 9.1	
Red metal	8.8	
Resin	1.07	67
Rhenium	21.4	
Rhodium	12.3	
Rock salt	2.2	136
Rock wool	0.22 - 0.39	
Rosin	1.07	
Rubber, hard	1.2	74
Rubber, soft commercial	1.1	69
Rubber, pure gum	0.91 - 0.93	57 - 58
Rubidium	1.52	
Sand, dry	1.4 - 1.6	
Sandstone	2.1 - 2.4	134 - 147
Selenium	4.4	
Serpentine	2.5 - 2.65	156 - 165
Silica, fused transparent	2.2	138
Silica, translucent	2.1	129
Silicon	2.33	144
Silver	10.5	
Slag	2 - 3.9	125 - 240
Slate	2.6 - 3.3	162 - 205
Snow	0.1	
Soapstone	2.6 - 2.8	162 - 175
Sodium	0.98	
Soot	1.6 - 1.7	
Spermaceti	0.95	59
Starch	1.5	95
Steatite	2.6 - 2.7	
Steel	7.82	
Stone	2.3 - 2.8	
Sulfur, cryst.	2.0	
Sugar	1.6	99
Talc	2.7 - 2.8	168 - 174
Tallow, beef	0.95	59

Solid	Density	
	(10 ³ kg/m ³)	(lb/ft ³)*
Bone, pulverized	0.88	55
Borax, fine	0.85	53
Brass	8.48	
Bronze	8.83	
Brown iron ore	5.1	
Brick	1.4 - 2.4	87 - 137
Brick, fire		143
Brick, hard		125
Brick, pressed		137
Brickwork in cement		112
Brickwork in mortar		100
Butter	0.87	53
Cadmium	8.64	
Calamine	4.1 - 4.5	255 - 280
Calcium	1.55	
Calcspars	2.6 - 2.8	162 - 175
Camphor	1	62
Carbon	3.51	
Caoutchouc	0.9 - 1	57 - 62
Cardboard	0.7	43
Cast Iron	7.2	
Celluloid	1.4	87
Cellulose, cotton, wood pulp, regenerated	1.48 - 1.53	
Cellulose acetat, moulded	1.22 - 1.34	
Cellulose acetat, sheet	1.28 - 1.32	
Cellulose nitrate, celluloid	1.35 - 1.4	
Chlorinated polyether	1.4	
Cement, set	2.7 - 3	170 - 190
Cement, Portland	1.5	94
Cerium	6.77	
Chalk	1.9 - 2.8	118 - 175
Charcoal, oak	0.6	35
Charcoal, pine	0.3 - 0.4	18 - 28
Chromium	7.1	
Chrom oxide	5.21	
Cinnabar	8.1	507
Clay	1.8 - 2.6	112 - 162
Coal, anthracite	1.4 - 1.8	87 - 112
Coal, bituminous	1.2 - 1.5	75 - 94
Cobalt	8.8	
Cocoa, butter	0.9	56
Coke	1 - 1.7	62 - 105
Concrete, lightweight	0.45 - 1.0	
Concrete, medium	1.3 - 1.7	
Concrete, dense	2.0 - 2.4	
Constantan	8.89	
Copal	1 - 1.15	65 - 71
Copper	8.79	
Cork	0.2 - 0.25	14 - 16
Cork, linoleum	0.55	34
Corundum	4.0	247
CPVC		97
Lead Crystal	3.1	192
Diamond	3 - 3.5	188 - 220
Dolomite	2.8	177
Duralium	2.8	
Earth, loose		75
Earth, rammed		100
Ebonite	1.15	72
Emery	4	250

According to the [Congressional Research Service](#) (CRS), the EPA "has surveyed the potential human health and environmental impacts of petcoke through its High Production Volume (HPV) Challenge Program and found the material to be highly stable and non-reactive at ambient environmental conditions. Most toxicity analyses of petcoke find it has a low potential to cause adverse effects on aquatic or terrestrial environments as well as a low health hazard potential in humans, with no observed carcinogenic, reproductive, or developmental effects."

Petroleum Coke is a Valued Global Commodity – Not a Waste Product

Over the years, the global commercial market for petcoke trading has evolved, connecting producers with ultimate end users. The industry has a history of safely storing, handling and transporting petcoke by ocean freight, barges, rail and truck. From 1992 to 2008, approximately 55 percent of U.S. petcoke was exported. That number jumped to 80 percent in 2012, driven by a global market for petcoke as a source of electricity generation in large part because of its high caloric value, low ash, and lower price relative to coal.

Understanding Petroleum Coke in the Refining Process

- Petroleum coke (petcoke) is one of the many products manufactured during the oil refining process. Crude oil is processed into gasoline, diesel fuel, jet fuel, lubricating oils and waxes, leaving some residual crude that usually undergoes additional processing. The crude residue may be further refined by a process known as coking. A coker breaks down, or cracks, large hydrocarbon molecules to produce petcoke, which has a variety of uses including as a cost-effective fuel.
- Petcoke's chemical composition is primarily elementary carbon.

Composition Of Coke From A Delayed Coker		
Component	Raw/Green coke as produced	Coke calcined at 2375 °F
Fixed carbon, wt %	80 – 95	98.0 – 99.5
Hydrogen, wt %	3.0 – 4.5	0.1
Nitrogen, wt %	0.1 – 0.5	
Sulfur, wt %	0.2 – 6.0	
Volatile matter, wt %	5 – 15	0.2 – 0.8
Moisture, wt %	0.5 – 10	0.1
Ash, wt %	0.1 – 1.0	0.02 – 0.7
Density, g/cm ³	1.2 – 1.6	1.9 – 2.1
Metals, ppm weight:		
Aluminum	15 – 100	15 – 100
Boron	0.1 – 15	0.1 – 15
Calcium	25 – 500	25 – 500
Chromium	5 – 50	5 – 50
Cobalt	10 – 60	10 – 60
Iron	50 – 5000	50 – 5000
Manganese	2 – 100	2 – 100
Magnesium	10 – 250	10 – 250

METALLURGICAL COKE

POSTED BY [SATYENDRA](#) ON APR 13, 2013 IN [ISPAT DIGEST](#) | [1 COMMENT](#)

<http://ispatguru.com/metallurgical-coke/>

Metallurgical coke

Metallurgical coke or Met coke in short is a hard carbon material produced in the process of the “destructive distillation” of various blends of bituminous coal. It is produced by carbonization of coal at high temperatures (1100°C) in an oxygen deficient atmosphere in a coke oven.

A good quality coke is generally made from carbonization of good quality coking coals. Coking coals are defined as those coals that on carbonization pass through softening, swelling, and re-solidification to coke. One important consideration in selecting a coal blend is that it should not exert a high coke oven wall pressure and should contract sufficiently to allow the coke to be pushed from the oven. The properties of coke and coke oven pushing performance are influenced by following coal quality and battery operating variables: rank of coal, petrographic, chemical and rheologic characteristics of coal, particle size, moisture content, bulk density, weathering of coal, coking temperature and coking rate, soaking time, quenching practice, and coke handling. Coke quality variability is low if all these factors are controlled.

The coal-to-coke transformation takes place as follows: The heat is transferred from the heated brick walls into the coal charge. From about 375°C to 475°C, the coal decomposes to form plastic layers near each wall. At about 475°C to 600°C, there is a marked evolution of tar, and aromatic hydrocarbon compounds, followed by re-solidification of the plastic mass into semi-coke. At 600°C to 1100°C, the coke stabilization phase begins. This is characterized by contraction of coke mass, structural development of coke and final hydrogen evolution. During the plastic stage, the plastic layers move from each wall towards the center of the oven trapping the liberated gas and creating in gas pressure build up which is transferred to the heating wall. Once, the plastic layers have met at the center of the oven, the entire mass has been carbonized. The incandescent coke mass is pushed from the oven and is wet or dry quenched prior to its shipment to the blast furnace.

In case of Non recovery or heat recovery coke plants the coal is carbonized in large oven chambers. The carbonization process takes place from the top by radiant heat transfer and from the bottom by conduction of heat through the sole floor. Primary air for combustion is introduced into the oven chamber through several ports located above the charge level in both pusher and coke side doors of the oven.

The water content in coke is practically zero at the end of the coking process, but it is often water quenched so that it can be transported to the blast furnaces. The porous structure of coke absorbs some water, usually 3-6% of its mass. In some of the coke plants dry quenching of coke is practiced.

Met coke is normally available in 3 varieties. These are coke breeze (size – 10 mm), nut coke (size +10 mm to – 25 mm) and blast furnace (BF) coke (+25 mm to – 80 mm). BF coke is shown in Fig 1.



Fig 1 BF Coke

Blast furnace coke has three major roles in iron making process: thermal, chemical and physical. The thermal role of blast furnace coke is being a source of fuel which provides the heat needed to melt iron and slag and for endothermic reactions inside the iron making blast furnace. The chemical role of blast furnace coke is producing and regenerating the reducing gases which are needed to reduce iron oxides; it's also carburizing molten iron. The physical role of blast furnace coke is supporting mechanically the charge column and the permeable bed below the cohesive zone.

Metalurgical coke properties

BF coke has a porous, open morphology and in some cases it may appear glassy. BF coke has hardly any volatile content; however the "ash" constituents, which were the part of the original feed coal remains entrapped in the resultant BF coke. The bulk density of coke is typically around 0.78.

High quality coke is characterized by a definite set of physical and chemical properties that can vary within narrow limits. The coke properties can be grouped into following two groups: a) Physical properties and b) Chemical properties.

Physical properties:

Measurement of physical properties aids in determining coke behavior both inside and outside the blast furnace. The physical properties are given below.

- Mean coke size– It is the arithmetic mean size of the coke determined by hand sizing the coke over a specified series of screens. Normally the larger the size of the coke it is better. A narrow size distribution of coke is also desirable.
- Coke reactivity index (CRI) – It is measured by a laboratory test designed to simulate the loss of coke through reaction in the reducing atmosphere, as the coke makes its way down the blast furnace. Coke is heated up to 950 deg C in an inert atmosphere and held at that temperature in an atmosphere of CO₂. The coke is cooled down under the inert atmosphere and the loss in weight expressed as a percentage is the CRI value of the coke. CRI measures the ability of coke to withstand breakage at room temperature and reflects coke behavior outside the blast furnace and in the upper part of the blast furnace.
- Coke strength after reaction (CSR) – This gives indication of the strength of coke after being exposed to the reducing atmosphere of the blast furnace. Coke, after exposure to the high temperature and CO₂ atmosphere of the coke reactivity test, is subjected to a tumbler test to determine the CSR. CSR measures the potential of the coke to break into smaller size under a high temperature CO/CO₂ environment that exists throughout the lower two-thirds of the blast furnace.

- Drum test – The test is based on Japanese standard JIS K2151. A 10 Kg representative sample of + 50 mm square hole coke is placed in the specified tumbler drum and rotated for 30 revolutions, removed, screened and replaced in the drum and subjected to a further revolution of 150 revolutions. The drum contains lifters that raise the coke and allow it to fall so that it undergoes a large number of impacts with the drum walls. The indices reported are percentages of material remaining on +15 mm square hole after 30 revolutions and the same after 150 revolutions. The larger is the value the higher is the coke strength.
- ASTM Tumbler test- In this test a 10 Kg representative sample of the – 75 mm +50 mm square hole coke is placed in a specified tumbler drum and rotated for 1400 revolutions. The test is based on American standard ASTM D3402. The coke stability is reported as the percentage of coke + 25 mm after 1400 revolutions and the hardness as the percentage of coke + 6.3 mm after 1400 revolutions. Higher values of these indices indicate the strength of the coke.
- Combined half Micum/Irsid test – In it a representative sample of +25 mm round hole coke is placed in the specified tumbler drum and rotated for 100 revolutions. The coke is removed, screened and replaced in the drum and subjected to a further 400 revolutions in the drum. The test is based on the international standard ISO 556. The following values are reported.
 - i) M40 – It is the percentage of coke remaining on the +40 mm round hole after 100 revolutions
 - ii) M10- It is the – 10 mm round hole coke after 100 revolutions.
 - iii) I 20 – It is the percentage of coke remaining on the +20 mm round hole after 500 revolutions
 - iv) I 10 – It is the – 10 mm round hole coke after 500 revolutions.

Larger values of M40 and I 20 and smaller value of M 10 and I 10 normally indicate coke with higher strength.

Chemical properties

The most important chemical properties are moisture, fixed carbon, ash, sulfur, phosphorus, and alkalis. Fixed carbon is the fuel portion of the coke; the higher the fixed carbon, the higher the thermal value of coke. The other components such as moisture, ash, sulfur, phosphorus, and alkalis are undesirable as they have adverse effects on energy requirements, blast furnace operation, hot metal quality, and/or refractory lining. The percentage of ash and sulfur content in coke is linearly dependent on the coal used for production.

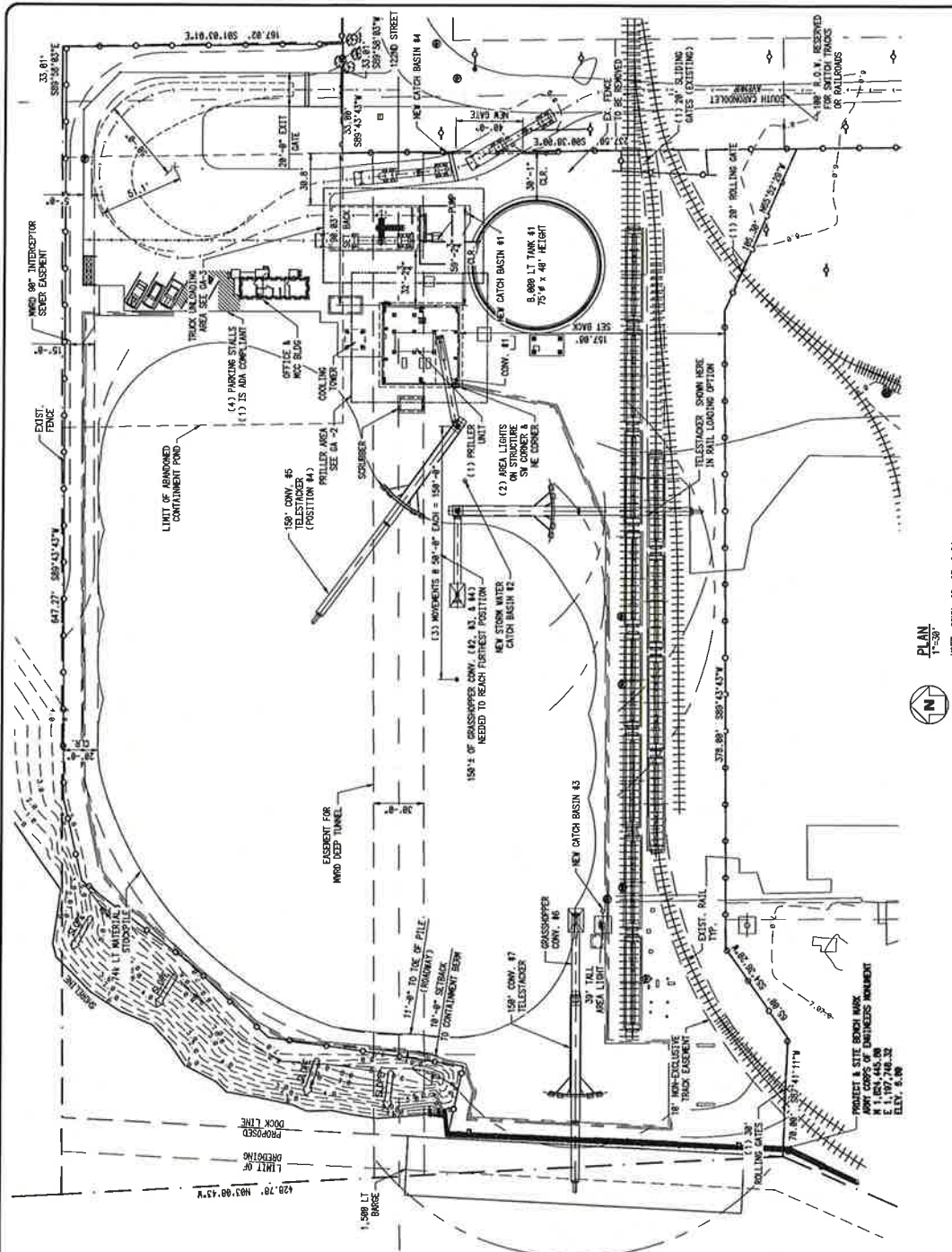
Uses of Met coke

Besides being used in blast furnace, sinter plant, steel making furnaces and ferro – alloy production, metallurgical coke has many more applications. It is used where a tough and resilient, high quality wearing carbon is needed. Met coke's applications include for example: friction materials, conductive flooring, foundry coatings, corrosion materials, foundry carbon raiser, reducing agents, drilling applications, ceramic packing media, heat-treatment, oxygen exclusion and electrolytic processes. Met coke can be also used as a filler coke for the poly-granular carbon products.

12200 S. Carondolet Ave., Chicago, Illinois – Gulf Sulphur Services Ltd., LLLP
Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 6-A

R&M Engineering Drawing(s)



DATE: 08-03-18
 111 N.W. 100th
 SCALE: 1"=30'
 DWG. NO.:
 REV:
 6A-1 10



**OVERALL SITE PLAN
 & ISOMETRIC VIEW**

RSM
RSM ENGINEERING CONSULTANTS
 SALT LAKE CITY, UTAH
 (801) 265-3419

12200 S₀ CARONDOLET AVE.
 CHICAGO, IL
 SAVAGE SERVICES CORPORATION

DESIGN	JSH
DRAWN	JSH
CHECKED	RED
APPROVED	

NO.	DATE	BY	REVISION

PLAN
 1"=30'
 NOTE: CONV. 42, 43, & 44
 NOT SHOWN FOR CLARITY



LEGEND:

PLE	Indiv. Vol. (L.T)	Σ Vol. (L.T)
YELLOW	30,000	30,000
RED	14,300	44,200
YELLOW	14,100	58,300
RED	14,100	72,300
YELLOW	1,400	73,600

- NOTES:**
1. SURVEY INFORMATION FROM WILLIAM ELMER & ASSOC. SURVEY 601076 DATED: 05-21-16.
 2. PULLER FACILITY DIMENSION PER DRAWING.
 3. BUILDING TYPES ARE 30" U.N.O.
 4. A. STEEL FRAMED BUILDING
 5. B. MOBILE TRAILER

**ISOMETRIC VIEW
 NOTES**

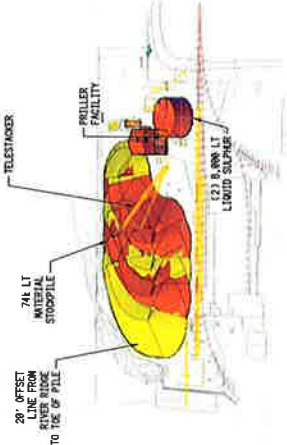
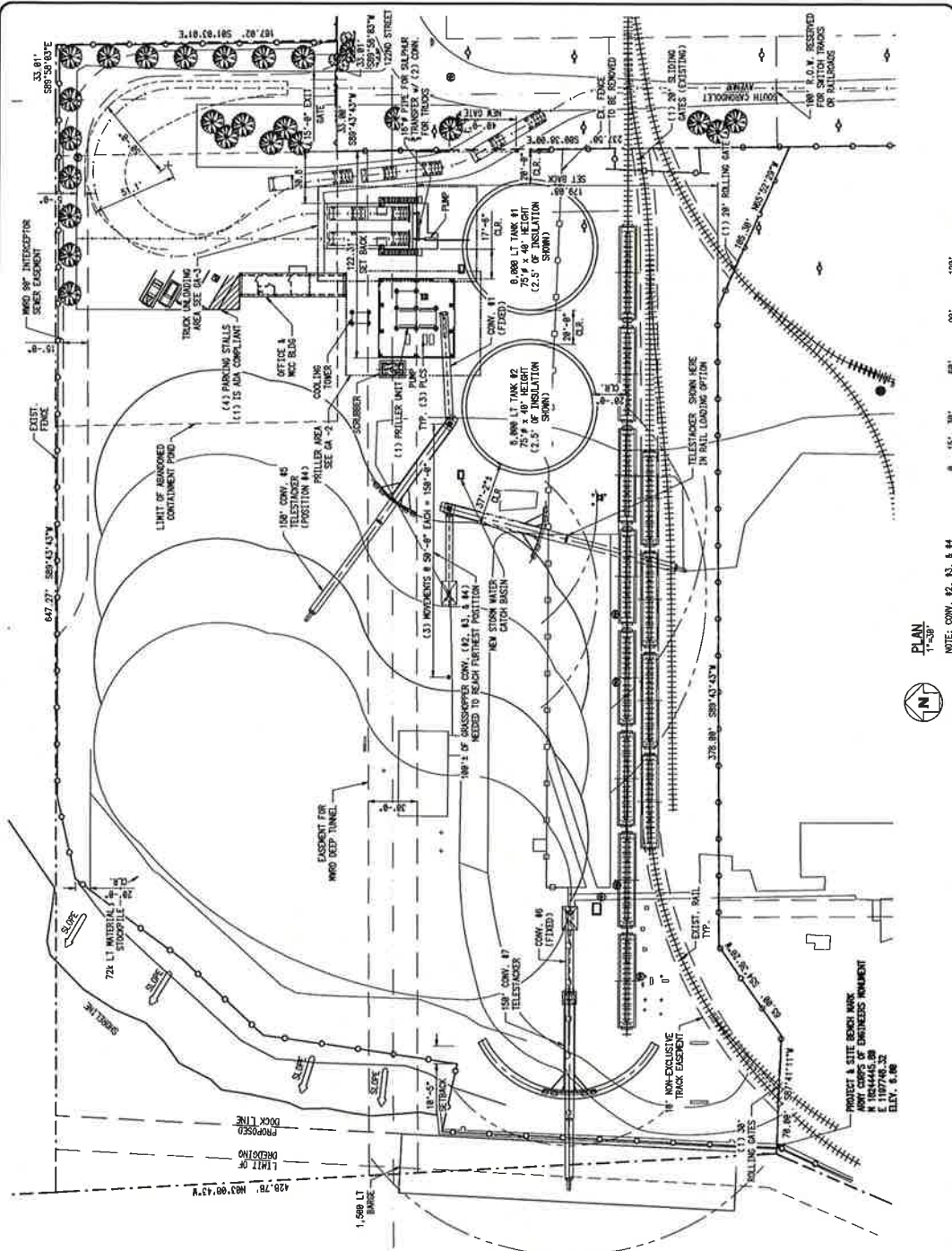


FIGURE 4



DATE:	06-23-10
BY:	R.M. 1001
SCALE:	1"=30'
DRAW. NO.:	6A-1
REV.:	D

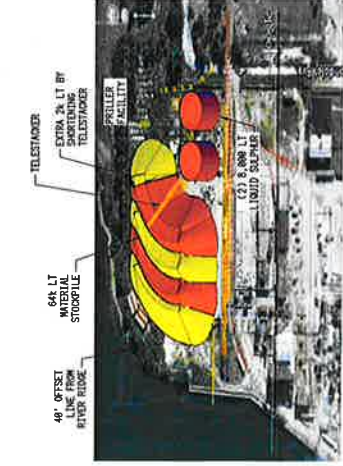
**GENERAL ARRANGEMENT
OVERALL SITE PLAN
& ISOMETRIC VIEW**

RISM
RISM ENGINEERING CONSULTANTS
561 LAKE CTS., UNIT
T881.265-2415

12200 to 12220 So. CARONDOLET AVE.
CHICAGO, IL
SAVAGE SERVICES CORPORATION

DESIGN:	JRH
DRAW:	JRH
CHECK:	
APPROVED:	

NO.	DATE	REVISION	BY	APPROV



ISOMETRIC VIEW

- NOTES:**
1. REFER INFORMATION FROM MILLIUM ENER & ASSOC SURVEY BOUND DATA, 05-11-10.
 2. PRILLER FACILITY DIMENSION PER DENO.
 3. ALL CONNECTIONS ARE 30" U.N.C.
 4. A. STEEL FRAMED BUILDING
 5. B. MOBILE TRAILER

PRELIMINARY

LEGEND:

PILE	Indiv. Vol. (LT)	∑ Vol. (LT)
YELLOW	22,800	22,800
RED	13,900	36,600
YELLOW	13,900	50,400
RED	13,900	64,300
YELLOW	2,200	66,400

PLAN
1"=30'

NOTE: CONV. #2, #3, & #4
NOT SHOWN FOR CLARITY



1"=30' 0' 15' 30' 60' 90' 120'

PROJECT & SITE BOUND MARK
ARMY CORPS OF ENGINEERS INVAUNT
N 1814445.08
E 1107466.32
ELEV. 6.06

PROJECT & SITE BOUND MARK
ARMY CORPS OF ENGINEERS INVAUNT
N 1814445.08
E 1107466.32
ELEV. 6.06

12200 S. Carondelet Ave., Chicago, Illinois – Gulf Sulphur Services Ltd., LLLP
Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 6-B

Sulphur Institute MARPOL Report

MARPOL Annex V Guidance: Solid Sulphur (UN1350) Classification as Not Harmful to the Marine Environment (non-HME)

Issue

Determination of whether solid sulphur (UN1350) is harmful to the marine environment (HME) or not harmful to the marine environment (non-HME) in accordance with the criteria set out in paragraph 3.2 of the 2012 *Guidelines for the Implementation of MARPOL Annex V*¹ in determining HME or non-HME cargoes.

Conclusion

The scientific literature and readily available data on the toxicological properties of sulphur support a conclusion that the material is not harmful to the marine environment (non-HME). Each shipper is responsible for making its own declaration regarding the material offered for shipment on appropriate shipping documents. The Sulphur Institute (TSI) staff will endeavor to continue to monitor regulatory activities for any changes related to this declaration requirement.

Background

Discharge of cargo residues from bulk cargo carriers was one of many issues considered during the October 2012 review of International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V. Cargo residues are defined as remnants of any cargo that are not covered by other annexes to the present MARPOL Convention and which remain on deck or in holds following loading or unloading. They include loading and unloading excess or spillage, whether in wet or dry condition or entrained in wash water, but do not include cargo residue remaining on deck after sweeping or on external surfaces of the ship. Voluntary declaration provisions of MARPOL Annex V have been in effect since January 1, 2013, as set forth in MEPC.1/Circ.791². Effective January 1, 2015 shippers are required to declare whether their solid bulk cargoes are either HME or non-HME in accordance with criteria in paragraph 3.2 of the 2012 *Guidelines for the Implementation of MARPOL Annex V*¹ in determining HME or non-HME cargoes.

Discussion

Cargo residues are included in the definition of garbage within the meaning of MARPOL Annex V and therefore may be discharged only in accordance with MARPOL regulations. Cargo residues are considered harmful to the marine environment and subject to regulations of the revised MARPOL Annex V, if they are residues of solid bulk materials that are classified according to the criteria of the United Nations Globally Harmonized System for Classification and Labelling of Chemicals (UN GHS) as meeting any of the following parameters:

- Acute Aquatic Toxicity Category 1;
- Chronic Aquatic Toxicity Category 1 or 2;
- Carcinogenicity Category 1A or 1B (and not rapidly degradable and high bioaccumulation);
- Mutagenicity Category 1A or 1B (and not rapidly degradable and high bioaccumulation);
- Reproductive Toxicity Category 1A or 1B (and not rapidly degradable and high bioaccumulation);
- Specific Target Organ Toxicity Repeated Exposure Category 1 (and not rapidly degradable and high bioaccumulation);
- Solid bulk cargoes containing or consisting of synthetic polymers, rubber, plastics, or plastic feedstock pellets

Solid sulphur is not listed as a marine pollutant in the International Maritime Dangerous Goods Code (IMDG)³. Additional data sources and references that address each of the seven classification criteria noted above are identified in Attachment A. These data demonstrate that formed, solid sulphur is non-HME. Appendix B provides a list of further references and readings.

Acknowledgements

The Sulphur Institute thanks Oxbow Sulphur Inc., Savage Services Corporation/Gulf Sulphur Services Ltd, LLLP, and Sultran, Ltd. for their assistance.

Appendix A

Summary of Classifying Solid Sulphur (UN 1350) as non-HME

No.	Criteria ^a	Met	Not Met ^b	References listed in Appendix B
1	Acute Aquatic Toxicity		b	4,6,8
2	Long Term Aquatic Toxicity		b	4,6,7,8
3	Carcinogenicity		b	4,5, 8
4	Mutagenicity		b	4,5,6
5	Reproductive Toxicity		b	4,5,8
6	Specific Target Organ Toxicity Repeated Exposure		b	5
7	Plastics	N/A	N/A	

^a Criteria set out in paragraph 3.2 of the 2012 Guidelines for the Implementation of MARPOL Annex V ²

^b If substance meets any one of the seven criteria, then residues would be considered “harmful to the marine environment” – therefore, solid sulphur is “non-HME”

Appendix B

References, Web Links and Further Readings for Data Relating to Classification of Solid Sulphur (UN1350)

1. International Maritime Organization. March 2, 2012. 2012 GUIDELINES FOR THE IMPLEMENTATION OF MARPOL ANNEX V. 21-22. London.
<http://www.imo.org/OurWork/Environment/PollutionPrevention/Garbage/Documents/219%2863%29.pdf>
2. International Maritime Organization. October 18, 2012. Implementation of Marpol Annex V (MPEC.1/Circ.791). London.
<http://www.imo.org/OurWork/Environment/PollutionPrevention/Garbage/Documents/2014%20revision/MEP C.1-Circ.791.pdf>
3. International Maritime Organization. 2012. International Maritime Dangerous Goods (IMDG) Code, Part 3. International Maritime Organization Publishing. London.
4. United States Environmental Protection Agency. May 1991. Reregistration Eligibility Document (R.E.D): Sulphur. US EPA, Office of Pesticide Control, Washington, DC.
<http://www.epa.gov/pesticides/reregistration/REDS/factsheets/0031fact.pdf>
http://www.epa.gov/pesticides/reregistration/REDS/old_reds/sulfur.pdf
5. Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection. 2002. The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships. Cover page 3. London.
http://www.gesamp.org/data/gesamp/files/media/Publications/Reports_and_studies_64/gallery_1363/object_1400_large.pdf (NOTE: Page 2 of online pdf document)

ANNEX 6, pg 56.

<http://www.imo.org/OurWork/Environment/PollutionPrevention/ChemicalPollution/Documents/GESAMP-EHSCompositelistofhazardprofiles.pdf>

6. European Chemicals Agency (ECHA) Sulphur Dossier.
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12200 S. Carondolet Ave., Chicago, Illinois – Gulf Sulphur Services Ltd., LLLP
Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 6-C

GESAMP Study

Gulf Sulphur Services Ltd., LLLP (GSS)

Jack Cohn
General Manager

December 16, 2014

Mr. Mark Whittemore
Oxbow Sulphur Inc.
1450 Lake Robbins Dr – Ste. 500
The Woodlands, Texas 77380

RE: Sulphur and Non-HME Determination

Mary Anne,

In response to the request for the MARPOL determination of formed / prilled Sulphur as NON-HME, please find the following study from GESAMP that shows the results of Sulphur meeting the Non-HME designation on the criteria.

In addition, formed or prilled Sulphur has previously met the Non-HME classification of the MARPOL Annex V Criteria 1, 2 and 7, therefore the determination of Criteria 3, 4, 5 and 6 for Sulphur and Non-HME can be made by reviewing the GESAMP hazard evaluation.

- Formed or prilled Sulphur has also been determined to have the following determination: Carcinogenicity - This product does not contain carcinogens or potential carcinogens as listed by ACGIH, IARC, OSHA, or NTP.

Category 3: Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation:

- Formed/prilled Sulphur is not rapidly degradable and has a determination of '0' for Biodegradation and Bioaccumulation is classified as Inorganic this is met for **Non-HME**

Category 4: Mutagenicity = Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation

- Formed/prilled Sulphur is inorganic and not rapidly degradable and has a determination of '0' for Biodegradation and Bioaccumulation is classified as Inorganic this is met for **Non-HME**

Category 5: Reproductive Toxicity = Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation

- Formed/prilled Sulphur is not rapidly degradable and has a determination of '0' for Biodegradation and Bioaccumulation is classified as Inorganic this is met for **Non-HME**

Category 6: Specific Target Organ Toxicity = Repeated Exposure Category 1 combined with not being rapidly degradable and having high bioaccumulation

- Formed/prilled Sulphur is not rapidly degradable and has a determination of '0' for Biodegradation and Bioaccumulation is classified as Inorganic this is met for **Non-HME**

As a result of the determination by current GHS SDS's along with the testing done by the GESAMP hazard evaluation, our Formed / Prilled Sulphur meets the definition of a **Non-HME** classification under the MARPOL Annex V classification criteria.

Please contact Jim McCoy at 281-673-1108 if you have further questions regarding this issue.

Regards,



Jack Cohn

cc: Beau Harris
Josh Knichel
Colleen Smith
Zach Fleming
Jim McCoy

GESAMP EHS Hazard Profile:

<http://www.gesamp.org/publications/publicationdisplaypages/rs64>

ANNEX 6 - GESAMP/EHS COMPOSITE LIST																EHS 50/8			
GESAMP Hazard Profiles																19 April 2013			
																Page 56 of 63			
EHS Name	Ala	Alb	Al	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3				
TRN Name	EHS TRN	RTECS No	WE	CAS No															
Sodium sulphide solution (15% or less)	663	WE1905000	CAS No	1313-82-2															
Sodium sulphite (solution)	0	Inorg	0	0	Inorg	2	NI	0	(0)	(1)	0	1				D	1		
Sodium sulphite solution (25% or less)	664	WE2150000	CAS No	7757-83-7															
Sodium tartrate succinate/Sodium tartrate disuccinate mixtures	1771	NI	1	1	NI	1	NI	0	NI	NI	NI	NI				D	NI		
Sodium tartrates/Sodium succinates solution	665																		
Sodium thiocyanate	1264	Inorg	0	0	Inorg	2	NI	1	(0)	(1)	0	0				D	1		
Sodium thiocyanate solution (56% or less)	667	XL2275000	CAS No	540-72-7															
Sorbitan monooleate	2215	(5)	NI	(5)	R	3	NI	0	NI	NI	0	0				Fp	2		
Sorbitan monooleate	2408																		
Sorbitol	1285	0	NI	0	R	0	NI	0	(0)	(0)	(0)	(0)				D	0		
Sorbitol solution	668	LZ4280000	CAS No	50-70-4															
Soyabean oil (containing less than 4% free fatty acids)	2320	0	NI	0	R	0	NI	0	(0)	(1)	(0)	1				Fp	2		
Soyabean oil	3050																		
Soybean oil fatty acids, methyl esters	2431	0	NI	0	R	2	NI	0	0	0	0	0				Fp	2		
Soybean oil fatty acids, methyl esters	3737																		
Styrene (monomer)	1273	3	(2)	3	R	3	NI	1	0	2	2	2	CM			FE	3		
Styrene monomer	669	WL3675000	CAS No	100-42-5															
Styrene butadiene rubber latex	1274	0	NI	0	NR	0	NI	0	0	(1)	0	1				D	1		
Latex: Carboxylated styrene-Butadiene copolymer, Styrene-Butadiene rubber	414																		
Sulfurized fat(C14-C20) (LOA)	1853	0	NI	0	NR	1	NI	0	(0)	(1)	0	(1)				FD	1		
Sulfurized fat (C14-C20)	2257																		
Sulfurized polyolefinamide alkene(C28-C250)amine (LOA)	1855	0	NI	0	NR	0	NI	0	0	(0)	0	0				FD	0		
Sulfurized polyolefinamide alkene (C28-C250) amine	2258																		
Sulpho hydrocarbon (C3-C88) (LOA)	1972	4	NI	4	NR	2	NI	0	0	0	0	0				Fp	2		
Sulpho hydrocarbon (C3-C88)	672																		
Sulpholane	1277	0	1	1	NR	2	0	1	0	0	1	2				SD	2		
Sulpholane	673	XN0700000	CAS No	128-33-0															
Sulphonated polyacrylate solution	1760	NI	0	0	NI	0	NI	(0)	(0)	(0)	(0)	(0)				D	0		
Sulphonated polyacrylate solution	674																		
Sulphur	606	Inorg	0	0	Inorg	0	NI	0	0	(1)	1	1				S	1		

H:ICIRCLGL1135 Annex 6

GESAMP Hazard Evaluation ratings:

<http://www.gesamp.org/data/gesamp/files/media/Publications/Reports and studies 64/gallery 1363/object 1400 large.pdf>

The Revised GESAMP hazard evaluation procedure						
Columns A & B Aquatic environment						
Numerical Rating	A Bioaccumulation and Biodegradation			B Aquatic Toxicity		
	A 1 Bioaccumulation		A 2 Biodegradation	B 1 Acute Toxicity	B 2 Chronic Toxicity	
	log Pow	BCF		LC/EC/IC ₅₀ (mg/l)	NOEC (mg/l)	
	0	<1 or > ca. 7	not measurable	R: readily biodegradable NR: not readily biodegradable	>1000	>1
1	≥1 - <2	≥1 - <10	>100 - ≤1000		>0.1 - ≤1	
2	≥2 - <3	≥10 - <100	>10 - ≤100		>0.01 - ≤0.1	
3	≥3 - <4	≥100 - <500	>1 - ≤10		>0.001 - ≤0.01	
4	≥4 - <5	≥500 - <4000	>0.1 - ≤1		<0.001	
5	≥5	≥4000	>0.01 - ≤0.1			
6				<0.01		

Columns C & D Human Health (Toxic Effects to Mammals)						
Numerical Rating	C Acute Mammalian Toxicity			D Irritation, Corrosion & Long term health effects		
	C 1 Oral Toxicity	C 2 Dermal Toxicity	C 3 Inhalation Toxicity	D 1 Skin irritation & corrosion	D 2 Eye irritation & corrosion	D 3 Long-term health effects
	LD ₅₀ (mg/kg)	LD ₅₀ (mg/kg)	LC ₅₀ (mg/l)			
0	>2000	>2000	>20	not irritating	not irritating	C – Carcinogen M – Mutagenic R – Reprotoxic S – Sensitising A – Aspiration haz. T – Target organ systemic toxicity L – Lung injury N – Neurotoxic I – Immunotoxic
1	>300 - ≤2000	>1000 - ≤2000	>10 - ≤20	mildly irritating	mildly irritating	
2	>50 - ≤300	>200 - ≤1000	>2 - ≤10	irritating	irritating	
3	>5 - ≤50	>50 - ≤200	>0.5 - ≤2	severely irritating or corrosive 3A Corr. (≤4hr) 3B Corr. (≤1hr) 3C Corr. (≤3m)	severely irritating	
4	≤5	≤50	≤0.5			

Column E Interference with other uses of the sea			
E 1 Tainting	E 2 Physical effects on Wildlife & benthic habitats	Numerical rating	E 3
			Interference with Coastal Amenities
NT: not tainting (tested) T: tainting test positive	Fp: Persistent Floater F: Floater S: Sinking Substances	0	no interference no warning
		1	slightly objectionable warning, no closure of amenity
		2	moderately objectionable possible closure of amenity
		3	highly objectionable closure of amenity

12200 S. Carondolet Ave., Chicago, Illinois – Gulf Sulphur Services Ltd., LLLP
Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 7-A

Devco USA, LLC - Report



Devco's comment on the proven history of successful operations of outdoor storage in all weather conditions

Devco currently has installed over 25 operating facilities throughout the world and has never been required to install wind screens or any extra measures for dust mitigation. Also, no other facility that we are aware of has had a requirement like the proposed 15mph wind speed operating limit.

The practice of open stockpile storage is very common in the US & Canada. There are many locations I could reference, but I consider it most instructive to focus on three West Coast installations as they operate in areas where environmental issues get more attention than US Gulf Coast facilities.

Open stockpiles on the West Coast

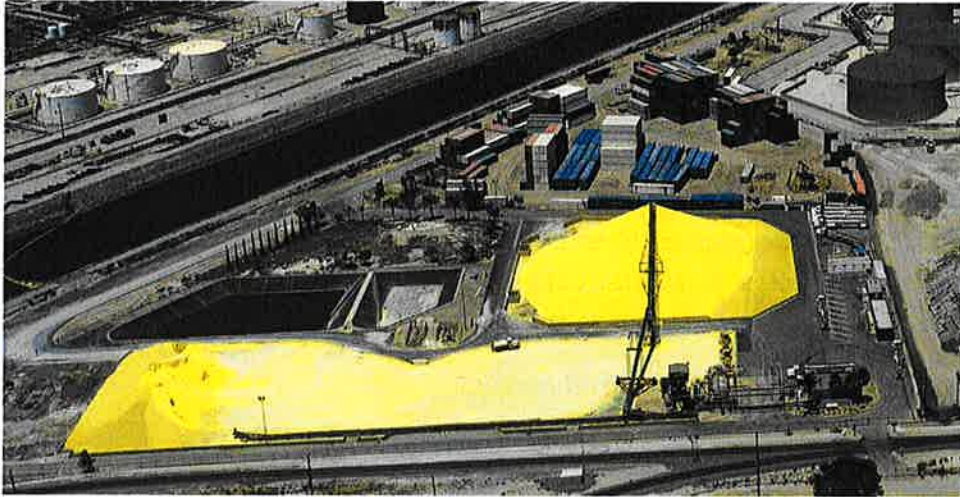
1. Long Beach, CA – the California Sulphur Company has operated a sulfur forming unit and outdoor storage (typical site storage 45-75,000 metric tons) since 1984. The facility has operated continuously since inception within the Port of Long Beach, at its facility located on the Pacific Coast Highway.

As one would expect, there is a very high level of scrutiny of outdoor storage. Petcoke is not allowed to be stored outdoor in Long Beach, but sulfur has been for over 30 years. There are fundamental differences between petcoke and sulfur. Sulfur formed in a Devco unit has approximately 2.0% moisture which adheres to the prill. This moisture entrains any dust which can be generated during storage and handling.

Real estate is a premium in California requiring facilities to be very compact and tight in Long Beach. If there were issues with sulfur dust migration – they would be forced into covered storage in a warehouse very quickly. Product size irregularity gives a high angle of repose to stored product and also resistance to disruption to wind speed. The facility also meets the South Coast Air Quality Management (SQAM)

Devco comments on pile integrity in high wind conditions
15 April 2014

regulations – which are the strictest governmental regulations for formed sulfur storage



Source: Aerial shot of Calsulco, provided by Devco

2. **Stockton, CA** (SF Bay Area) – this unit has been operating with an open stockpile since 1993.

The two operating facilities at this port make a very strong argument for the safety of outdoor storage.

The Union Pacific Railroad operates a coal export terminal adjacent to the sulfur facility. Coal is given a commercial grading by sulfur content. If there were any fugitive dust emissions from the adjacent sulfur pile to the coal storage area in Stockton the coal exporter would immediately protest for the devaluing of the export product. No issues of contamination have been reported.



Source: aerial "Bird's Eye" shot from Bing Maps: <http://binged.it/1noDnQe>

3. Vancouver, BC, Canada



Source: Aerial shot from Bing Maps – with notation by Devco.

Sulfur Pile visible from downtown Vancouver & Stanley Park. The outdoor storage pile is visible during from many different cruise ships that utilize the Port of Vancouver as their home base for many Alaskan cruises.

Very sensitive environmental area, low tolerance for any hydrocarbon based product to cause even minor environmental issues.

Open outdoor stockpile storage, inbound and outbound handling systems and loading into ocean transport ship outdoors for over 30 years at Pacific Coast Terminals and Vancouver Wharves.

Pile integrity during unusual wind events

Devco's forming units on the US Gulf Coast also utilize outdoor storage. The units located in Donaldsonville, LA and Beaumont, TX were put to extreme tests of pile integrity during outstanding wind events from Hurricanes Katrina and Rita in 2005, along with Ike and Gustav 2008.

Devco comments on pile integrity in high wind conditions
15 April 2014

The operators of the two Devco units have reported to us that the sulfur piles were undisturbed during these events & there were no extraordinary cleanups or remediation required.

Please feel free to contact me with any further questions.

Best regards,

Bevan Houston
Director of Business Development
6846 S Canton STE 400
Tulsa, OK 74137
(918) 281-6036 – direct line

12200 S. Carondolet Ave., Chicago, Illinois – Gulf Sulphur Services Ltd., LLLP

Request for Variations from Regulations

(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 8-A

Envirobind - Product Description

IPAC ENVIROBIND S

ENVIRONMENTALLY FRIENDLY WATER-BASED SULPHUR DUST SUPPRESSANT

Description and Uses

The Envirobind family of dust binders and suppressant are the result of "Green Chemistry" advances. These products are designed to minimize the environmental impact during application. Green products with low environmental impact were achieved through "state of the art" advances in wetting agents and natural sourced tack agents. All products are biodegradable and have low toxicity. At application dosage Envirobind is safe and harmless to the environment.

IPAC Envirobind S is the result of continued research and improvements in sulfur dust control. IPAC Envirobind S provides all the dust control features of the IPAC Dustbind family while being more environmentally friendly. IPAC Envirobind S uses state of the art "green" technology to minimize the environmental impact, as a result dramatically lowering fish and eco-toxicity. IPAC Envirobind S is a specially formulated dust suppression agent, developed to provide immediate and long-term dust control on a variety of sulphur forms and high fines content material. Field trials in commercial applications of IPAC Envirobind S have confirmed that atomized spray applications provide sufficient chemical coverage to effectively control dust, thus eliminating aerated foam application systems. The essentials for a good dust binder and suppressant are firstly, an ability to "wet" the dust, and secondly to have high tack to bind the dust particles together, or to larger particles, by leaving a very small amount of sticky residue on the substrate. IPAC Envirobind S provides three dust control features; 1) Surface tension modification, 2) Wetting ability, and 3) Charge neutralization. Surface tension modification is required so that the product can cover the hydrophobic sulfur granule surface. Wetting ability allows water to adhere to the sulfur surface in a micro boundary layer even when the sulfur may appear dry. Charge neutralization prevents the collection of repelling electrical charges on the sulfur surface such that the dust particles will remain on the granules. As well as these features, IPAC Envirobind S has enhanced residual effect, thus remaining effective for extended periods of time.

Typical Properties

Appearance.....	Amber Liquid
pH	6-7.5
Specific Gravity	1.04
Viscosity	55 mPa s
Freezing Point	-10°C
Freeze-Thaw Stability.....	Complete with agitation
Solubility in Water.....	Good
Shelf Life.....	2 years



engineered chemical solutions

1620 West 75th Avenue | Vancouver, BC | Canada V6P 6G2

IPAC CHEMICALS T: 604 261 3019 F: 604 261 1655 Toll free: 1 888 247 0000 E: info@ipacchem.net POWER CHEMICALS T: 604 263 0803 F: 604 261 1655 E: info@powerchem.net

Application

IPAC Envirobind S should be diluted with water to a 5% or greater solution, depending on the need. The dilution can be achieved either via in-line static mixing or in a bulk tank with agitation. Typical application is depending on the amount of fines within the sulfur. For further application information, please contact your IPAC representative.

Shipping and Handling

IPAC Envirobind S is supplied in 200 L drums or 1000 L tote bins. Bulk delivery to an on-site storage tank is also available. Do not store near excessive heat.

Regulatory Status

TDG: Not Regulated
WHMIS: Not WIMIS Regulated

2009/09/17



engineered chemical solutions

1020 West 75th Avenue | Vancouver, BC | Canada V6P 6G2

IPAC CHEMICALS | 604 261 3019 | 604 261 1655 | toll free 1 888 247 0000 | E: info@ipacchem.net | POWER CHEMICALS | 604 263 0803 | 604 261 1655 | info@powerchem.net

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Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 8-B

Envirobind - Product Application Instructions

- 1) Addition of Envirobind S to the existing system:
 - a. Envirobind S can be added to the system in one of two ways:
 - i. Pre-dilution into the water tank.
 - ii. Injection in-line with the pressurized water.

- 2) Recommended Application of Envirobind S.
 - a. Envirobind S is typically applied at a 9:1 (water : Envirobind S) ratio, either pre-diluted or injected into a pressurized water line.
 - b. Lower pressure, medium droplet size, higher impact nozzles are recommended for maximum penetration into the sulphur flow. These are normally flat jet style nozzles operating at between 20 and 60 psi. High pressure fog nozzles are **not** recommended for the application of Envirobind S.
 - i. Envirobind S is intended to eliminate the generation of dust at the point of application and subsequent application points. It is not normally used as a 'knock down' or dust collection system (as a fog system is designed for).
 - ii. The use of Envirobind S in a fog system is not the most efficient use of the product.

- 3) Residual Efficacy of Envirobind S.
 - a. The residual effect of Envirobind S is dependent on a number of factors, such as:
 - i. Initial Envirobind S Dosage.
 - ii. Total moisture in the sulphur (original and added with Envirobind S).
 - iii. Number and style of transfer or handling points.
 - iv. Site temperature and humidity.
 - b. The required dosage of Envirobind S is optimized during commissioning for required results; normal dosage is 100 to 200 ppm, based on weight of sulphur.

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Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 8-C

Envirobind - Material Safety Data Sheet

PRODUCT NAME ENVIROBIND S

EFFECTIVE DATE January 1, 2013

PAGE 1 OF 3

SECTION 1 - PRODUCT IDENTIFICATION AND USE

<p>PRODUCT NAME ENVIROBIND S</p> <p>PRODUCT USE Dust suppressant</p> <p>MANUFACTURER IPAC CHEMICALS LTD. 1620 West 75th Avenue Vancouver, B.C. V6P 6G2</p>	<p>TDG SHIPPING NAME Not regulated</p> <p>TDG CLASS Not regulated</p> <p>UN/PIN NUMBER Not applicable</p>	<p>HMIS RATINGS</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Health</td> <td style="text-align: right; padding: 2px;">1</td> </tr> <tr> <td style="padding: 2px;">Flammability</td> <td style="text-align: right; padding: 2px;">0</td> </tr> <tr> <td style="padding: 2px;">Reactivity</td> <td style="text-align: right; padding: 2px;">0</td> </tr> <tr> <td style="padding: 2px;">Personal Protection</td> <td style="text-align: right; padding: 2px;">X</td> </tr> </table> <p>WHMIS CLASS Not WMIS controlled</p>	Health	1	Flammability	0	Reactivity	0	Personal Protection	X
Health	1									
Flammability	0									
Reactivity	0									
Personal Protection	X									

EMERGENCY TELEPHONE NUMBER (CANUTEC 24 HOURS) (613) 996-6666

SECTION 2 - HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	APPROX. CONC %	C.A.S. NUMBER	EXPOSURE LIMITS	LD ₅₀ /LC ₅₀ - SPECIES AND ROUTE
This product contains no controlled ingredients at disclosable concentrations.				

SECTION 3 - PHYSICAL DATA

PHYSICAL STATE Liquid	APPEARANCE Amber liquid		ODOUR Faint
ODOUR THRESHOLD (ppm) Not available	VAPOUR PRESSURE (mm Hg) Not available	VAPOUR DENSITY (Air =1) Not available	EVAPORATION RATE Not available
BOILING POINT (°C) >100 °C	FREEZING POINT (°C) -10	SOLUBILITY IN WATER (20°C) Soluble	% VOLATILE Not available
pH 6-7.5	DENSITY (g/mL) (20°C) 1.04	COEFFICIENT OF WATER/OIL DISTRIBUTION > 1	

SECTION 4 - REACTIVITY DATA

CHEMICAL STABILITY Stable.
INCOMPATIBILITY WITH OTHER SUBSTANCES Avoid contact with strong oxidizing materials.
HAZARDOUS DECOMPOSITION PRODUCTS None

IPAC

MATERIAL SAFETY DATA SHEET

PRODUCT NAME ENVIROBIND S

EFFECTIVE DATE January 1, 2013

PAGE 2 OF 3

SECTION 5 - FIRE AND EXPLOSION HAZARDS

FLAMMABILITY/COMBUSTIBILITY

This product is not classified as flammable or combustible according to WHMIS.

MEANS OF EXTINCTION

Chemical foam, dry chemical, carbon dioxide, or water fog as required for surrounding fire.

SPECIAL FIRE-FIGHTING PROCEDURES

None.

HAZARDOUS COMBUSTION PRODUCTS

Thermal decomposition yields oxides of carbon and possibly thick smoke.

FLASH POINT (°C) & METHOD
none

UPPER EXPLOSION LIMIT (% BY VOLUME)
Not applicable

LOWER EXPLOSION LIMIT (% BY VOLUME)
Not applicable

AUTO IGNITION TEMP. (°C)
Not available

TDG FLAMMABILITY CLASS
Not applicable

SENSITIVITY TO STATIC DISCHARGE
Not sensitive

SENSITIVITY TO MECHANICAL IMPACT
Not sensitive

SECTION 6 - TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY

Skin Skin Eye Inhalation Inhalation Ingestion
Contact Absorption Contact Acute Chronic

EFFECTS OF ACUTE EXPOSURE TO PRODUCT

Slightly Irritating to eyes.

EFFECTS OF CHRONIC EXPOSURE TO PRODUCT None

LD₅₀
Not available

LC₅₀
Not available

EXPOSURE LIMITS
Not available

Carcinogen Reproductive Teratogen Mutagen Irritant Sensitizer
Effects

SECTION 7 - PREVENTIVE MEASURES

PROTECTIVE GLOVES

PVC coated gloves as required.

RESPIRATORY PROTECTION

Generally not required unless aerosol mists generated, if so use NIOSH approved organic vapour/mist respirator.

EYE PROTECTION

Safety goggles or safety glasses to protect from mist.

PROTECTIVE FOOTWEAR

Rubber boots recommended.

PROTECTIVE CLOTHING

As required to reduce skin contact.

OTHER PROTECTIVE EQUIPMENT

IPAC

MATERIAL SAFETY DATA SHEET

PRODUCT NAME ENVIROBIND S

EFFECTIVE DATE January 1, 2013

PAGE 3 OF 3

SECTION 7 - PREVENTIVE MEASURES (Continued)

ENGINEERING CONTROLS

General ventilation usually adequate.

LEAK AND SPILL PROCEDURES

Dike or contain. Absorb irrecoverable material onto inert absorbent medium, package, and label for legal disposal. Wash hard surfaces with water. Contaminated absorbent material may be disposed of in an approved landfill

WASTE DISPOSAL

Dispose of in accordance with Federal, Provincial, and Municipal regulations. May be disposed in an approved landfill.

HANDLING PROCEDURES AND EQUIPMENT

Handle in accordance with good industrial hygiene practice. Minimize contact with eyes, skin, and clothing. Wash thoroughly with soap and water after handling.

STORAGE REQUIREMENTS

Store in closed containers in a cool dry location. Keep away from excessive heat or strong oxidizing material.

SPECIAL SHIPPING INFORMATION

Keep container sealed and upright during transport.

SECTION 8 - FIRST AID MEASURES

SKIN

Wash thoroughly affected area with soap and water.

EYE

Flush eyes, holding the eyelids open, with lukewarm, gently flowing water for at least 15-20 minutes, then seek medical attention if irritation persists.

INHALATION

Negligible unless heated to produce vapours. Vapour or aerosol mists may irritate. Remove to fresh air.

INGESTION

No hazard anticipated from ingestion incidental to industrial exposure.

GENERAL ADVICE

SECTION 9 - PREPARATION OF M.S.D.S.

PREPARED BY

Regulatory Affairs Department

PHONE NUMBER

(604) 261-3019

DATE

January 1, 2010

ADDITIONAL INFORMATION AND COMMENTS

Every effort is made to ensure that the data presented herein is current and factual; however, no warranty nor any other legal responsibility is to be construed from this document. Numerical values reported represent nominal and/or typical properties and do not constitute specifications. Any use of the information presented herein must be determined by the user to be in accordance with applicable Federal, Provincial and local laws and regulations.

12200 S. Carondolet Ave., Chicago, Illinois – Gulf Sulphur Services Ltd., LLLP
Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 9-A

State of Florida - Proposed Revisions to Regulations

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED REVISION TO STATE IMPLEMENTATION PLAN**



**SUBMITTAL NUMBER 2012-02
REMOVAL OF SULFUR STORAGE AND HANDLING RULES**

April 5, 2012

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STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PROPOSED REVISION TO STATE IMPLEMENTATION PLAN

SUBMITTAL NUMBER 2012-02
REMOVAL OF SULFUR STORAGE AND HANDLING RULES

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Letter of Submittal



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

April 5, 2012

Ms. Gwendolyn Keyes Fleming
Regional Administrator
U.S. Environmental Protection Agency (EPA) - Region 4
61 Forsyth Street SW
Atlanta, GA 30303-8909

Dear Ms. Keyes Fleming:

Re: Air Program: Proposed Revision to Florida's State Implementation Plan -
Removal of Sulfur Storage and Handling Rules (Proposed SIP Revision 2012-02)

In accordance with 40 CFR 51.103, I am pleased to submit for your review and approval the subject proposed revision to Florida's State Implementation Plan (SIP) under the Clean Air Act. The SIP revision consists of the removal of two rule sections related to new and existing sulfur storage and handling facilities. The department has determined that the rule sections are no longer necessary.

The complete SIP submittal package (hard copy and CD) has been sent directly to the Air Planning Branch. The electronic copy is an exact duplicate of the hard copy. The notice of opportunity to submit comments, request a public hearing, or participate in a public hearing, if requested, regarding the proposed SIP revision was published on October 14, 2011, in the Florida Administrative Weekly. There were no requests for a hearing, so the hearing, scheduled for November 16, 2011, was cancelled. I hereby certify that the public participation requirements of all applicable state and federal regulations, including those of 40 CFR 51.102, have been satisfied with respect to this proposed SIP revision.

In addition to submitting this proposed SIP revision for the removal of the Sulfur Storage and Handling Facilities rules, we also hereby withdraw our request for approval of the pending proposed SIP Revision 2000-01, Corrective Amendments for Sulfur Storage and Handling Facilities, which we submitted to your office on August 22, 2000 (EPA tracking number FL-108). With removal from the SIP of rule section 62-212.600, Florida Administrative Code (F.A.C.), as requested herein, the previously submitted corrective amendments to the rule are now obsolete.

Ms. Gwendolyn Keyes Fleming
April 5, 2012
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Thank you for your continued support of our efforts to fully implement the Clean Air Act in Florida. If you have any questions about this proposed SIP revision, please contact Chad Stevens at (850)717-9089 or by e-mail at Chad.R.Stevens@dep.state.fl.us.

Sincerely,



Brian J. Accardo
Deputy Director, Division of Air Resource Management

cc (with SIP package): R. Scott Davis, Chief, Air Planning Branch, EPA Region 4

Executive Summary
Proposed Revision to State Implementation Plan
Submittal Number 2012-02
Removal of Sulfur Storage and Handling Rules

Introduction

The Department of Environmental Protection (DEP) is proposing a revision to Florida's State Implementation Plan (SIP) under the federal Clean Air Act (CAA). The proposed SIP revision would eliminate unnecessarily-specific particulate matter requirements for new and existing sulfur storage and handling facilities in the state.

The proposed revision involves the requested removal from the SIP of two Florida Administrative Code (F.A.C.) rule sections in two F.A.C. rule chapters.¹ The following two F.A.C. rule sections are hereby submitted to the U.S. Environmental Protection Agency (EPA) for approval to be removed from Florida's SIP.

Chapter 62-212, F.A.C., "Stationary Sources – Preconstruction Review"

1. Rule 62-212.600, F.A.C., "Sulfur Storage and Handling Facilities"

Chapter 62-296, F.A.C., "Stationary Sources – Emission Standards"

2. Rule 62-296.411, F.A.C., "Sulfur Storage and Handling Facilities"

Background

With removal of the above two rules from the SIP, Florida's particulate matter requirements under the SIP for new and existing sulfur storage and handling facilities would align with the particulate matter requirements for other, similar dry material handling sources in the state. In 1985, when the sulfur storage and handling rules were first adopted, there was concern that total suspended particulate matter levels in Florida would be negatively impacted by increased sulfur handling and storage operations to such an extent as to warrant additional facility-specific work practices and monitoring. This has turned out not to be the case. The particulate matter emissions from these facilities are, in fact, negligible. The "General Preconstruction Review Requirements" and "Prevention of Significant Deterioration (PSD)" provisions of Rules 62-212.300 and 62-212.400, F.A.C., respectively; and the "General Pollutant Emission Limiting Standards" of Rule 62-296.320, F.A.C., can be applied to adequately control these negligible particulate matter emissions. Therefore, DEP has determined that separate regulations for sulfur storage and handling facilities are no longer necessary and should be removed from the SIP in the interest of streamlining Florida's air regulations.

¹In the Florida Administrative Code, "62-212," for example, is a rule chapter, and "62-212.600" is a rule section, commonly written as "Chapter 62-212, F.A.C.," and "Rule 62-212.600, F.A.C.," respectively. The effective dates of new and amended rules in the F.A.C. are tied to rule sections; therefore, EPA incorporates F.A.C. rules into Florida's SIP on a section-by-section basis according to their state effective dates. Likewise, EPA removes rules from the SIP on a section-by-section basis.

SIP Development Process

As previously stated, the proposed SIP revision involves removal of two previously-approved F.A.C. rule sections in two separate F.A.C. rule chapters: Rule 62-212.600, “Sulfur Storage and Handling Facilities,” in Chapter 62-212, F.A.C., “Stationary Sources – Preconstruction Review;” and Rule 62-296.411, “Sulfur Storage and Handling Facilities,” in Chapter 62-296, “Stationary Sources – Emission Standards.”

Section 403.061(35), Florida Statutes, authorizes DEP to “exercise the duties, powers, and responsibilities required of the state under the federal Clean Air Act.” These duties and responsibilities include the development and periodic updating of Florida’s SIP. Pursuant to this authority, DEP has developed this proposed SIP revision.

Pursuant to state administrative procedures and 40 CFR 51.102, on October 14, 2011, DEP published a notice in the Florida Administrative Weekly (FAW) announcing the opportunity for the public to provide comments, request a public hearing, or participate in a public hearing to be held on November 16, 2011, if requested, regarding the proposed revision to Florida’s SIP. No hearing was requested by November 14, 2011, so the hearing was cancelled. Procedural questions were received and responded to. The questions and response can be found in the “Public Comments on SIP Notice” section of this submittal.

In accordance with the 30-day notice requirement of 40 CFR 51.102, a pre-hearing submittal regarding the proposed SIP revision was transmitted to EPA on October 14, 2011, and posted on the DEP website. At the same time, notice of the opportunity to submit comments, request a public hearing, or participate in the public hearing, if requested, was transmitted to neighboring states and Florida’s local air pollution control programs.

Summary of Proposed SIP Revision

Rules 62-212.600 and 62-296.411, F.A.C., are proposed to be removed from Florida’s SIP for the reasons summarized below.

- **Rule 62-212.600 – “Sulfur Storage and Handling Facilities”** – Rule is unnecessary; the “General Preconstruction Review Requirements” and “Prevention of Significant Deterioration (PSD)” provisions of the Rules 62-212.300 and 62-212.400, F.A.C., respectively, can be used instead to prevent particulate matter emissions that would interfere with attainment and maintenance of national ambient air quality standards, prevention of significant deterioration of air quality, or protection of visibility.
- **Rule 62-296.411 – “Sulfur Storage and Handling Facilities”** – Rule is unnecessary; the “General Pollutant Emission Limiting Standards” of Rule 62-296.320, F.A.C., can be applied instead to adequately control particulate matter emissions from dry material handling operations such as those associated with sulfur storage and handling facilities.

Response to 40 CFR Part 51, Appendix V, Criteria

Pursuant to 40 CFR Part 51, Appendix V, the following shall be included in SIP submissions for review by EPA:

2.1. Administrative Materials

(a) A formal letter of submittal from the Governor or his designee, requesting EPA approval of the plan or revision thereof (hereafter “the plan”).

A copy of the “Letter of Submittal,” signed by the Deputy Director of the Division of Air Resource Management, Florida DEP, on behalf of the Governor of the State of Florida, is located at the front of this document.

(b) Evidence that the State has adopted the plan in the State code or body of regulations; or issued the permit, order, consent agreement (hereafter “document”) in final form. That evidence shall include the date of adoption or final issuance as well as the effective date of the plan, if different from the adoption/issuance date.

Not applicable.

(c) Evidence that the State has the necessary legal authority under State law to adopt and implement the plan.

DEP has the necessary legal authority to adopt and implement this proposed revision to Florida’s SIP. References to the pertinent Florida Statutes and Florida Administrative Code rules may be found in the “Legal Authority” section of this submittal.

(d) A copy of the actual regulation, or document submitted for approval and incorporation by reference into the plan, including indication of the changes made (*such as, redline/strikethrough*) to the existing approved plan, where applicable. The submittal shall be a copy of the official State regulation/document signed, stamped and dated by the appropriate State official indicating that it is fully enforceable by the State. The effective date of the regulation/document shall, whenever possible, be indicated in the document itself. *If the State submits an electronic copy, it must be an exact duplicate of the hard copy with changes indicated, signed documents need to be in portable document format, rules need to be in text format and files need to be submitted in manageable amounts (e.g., a file for each section or chapter, depending on size, and separate files for each distinct document) unless otherwise agreed to by the State and Regional Office.*

This proposed revision to Florida’s SIP consists of the requested removal from the SIP of:

1. Rule 62-212.600, F.A.C., “Sulfur Storage and Handling Facilities”
2. Rule 62-296.411, F.A.C., “Sulfur Storage and Handling Facilities”

Copies of these rule sections as currently incorporated into the SIP may be found in the “Materials Proposed to be Removed from the SIP” section of this submittal.

(e) Evidence that the State followed all of the procedural requirements of the State's laws and constitution in conducting and completing the adoption/issuance of the plan.

State law (section 120.525, F.S.) requires DEP to provide notice of public meetings, hearings, and workshops in the Florida Administrative Weekly (FAW) not less than seven days before the event. Through publication in the FAW of the notice of opportunity to participate in a public hearing, if requested, at least 30 days before the event, DEP has complied with all state procedural requirements relevant to the development of this proposed SIP revision. A copy of the notice of proposed SIP revision may be found in the "Public Participation" section of this submittal.

(f) Evidence that public notice was given of the proposed change consistent with procedures approved by EPA, including the date of publication of such notice.

DEP has complied with all public notice requirements of 40 CFR 51.102. Copies of the relevant notices and notification letters may be found in the "Public Participation" and "Pre-Hearing Submittal to EPA" sections of this submittal.

(g) Certification that public hearing(s) were held in accordance with the information provided in the public notice and the State's laws and constitution, if applicable and consistent with the public hearing requirements in 40 CFR 51.102.

Certification of compliance with all state and federal public notice and hearing requirements is provided in the "Letter of Submittal."

(h) Compilation of public comments and the State's response thereto.

Written comments received during the public notice period on this proposed SIP revision, and DEP's response thereto, may be found in the "Public Participation" and "Pre-Hearing Submittal to EPA" sections of this submittal.

2.2. Technical Support

(a) Identification of all regulated pollutants affected by the plan.

Particulate matter (in the form of PM₁₀ and PM_{2.5}) is the pollutant affected by the plan. Sulfur dioxide (SO₂) is not a pollutant affected by the plan. Sulfur does not convert to sulfur dioxide at ambient conditions. Sulfur must be oxidized (burned) to create sulfur dioxide. In the Frasch process, elemental sulfur is melted, filtered to remove ash, sprayed under pressure into a combustion chamber and burned to create SO₂. (See AP-42 Section 8.10, Sulfuric Acid, <http://www.epa.gov/ttn/chief/ap42/ch08/index.html>.)

(b) Identification of the locations of affected sources including the EPA attainment/nonattainment designation of the locations and the status of the attainment plan for the affected areas(s).

Locations of affected sources, including the EPA attainment/nonattainment designation, are set forth in Table 1, below.

Table 1 – Location of Affected Sources				
Facility ID	Facility/Site Name	County	PM_{2.5} Attainment/ Nonattainment Location Designation	PM₁₀ Attainment/ Nonattainment Location Designation
0470002	White Springs Agricultural Chemicals Suwanee River/ Swift Creek Complex	Hamilton	Unclassifiable	Unclassifiable
0570005	CF Industries, Inc. Plant City Phosphate Complex	Hillsborough*	Unclassifiable	Unclassifiable
0570008	Mosaic Fertilizer Riverview Facility	Hillsborough*	Unclassifiable	Unclassifiable
0570082	Gulf Sulphur Services, Ltd., LLLP Hookers Point Site, Tampa	Hillsborough*	Unclassifiable	Unclassifiable
0570100	Gulf Sulphur Services, Ltd., LLLP Port Sutton Site, Tampa	Hillsborough*	Unclassifiable	Unclassifiable
0570455	Pasco Terminals, Inc. Port Sutton, Tampa	Hillsborough*	Unclassifiable	Unclassifiable
0570477	Martin Gas Sales, Inc. Pendola Point Rd, Tampa	Hillsborough*	Unclassifiable	Unclassifiable
1050046	Mosaic Fertilizer Bartow Facility	Polk*	Unclassifiable	Unclassifiable
1050055	Mosaic Fertilizer South Pierce Plant	Polk*	Unclassifiable	Unclassifiable
1050059	Mosaic Fertilizer New Wales Facility	Polk*	Unclassifiable	Unclassifiable
1130005	Quantum Resources Management, LLC - St. Regis Gas Treatment Facility and Jay Gas Plant	Santa Rosa	Unclassifiable	Unclassifiable

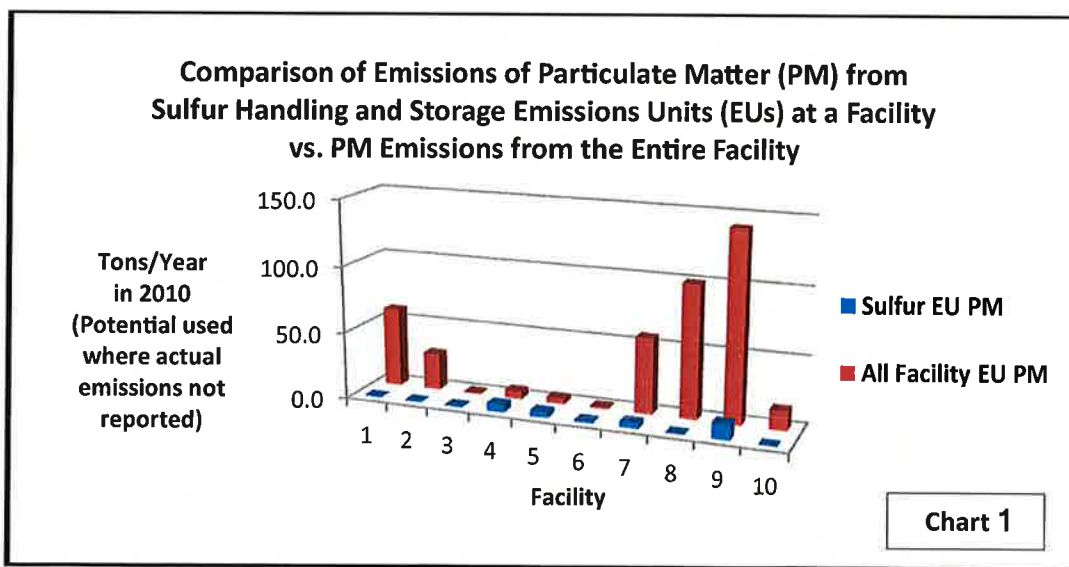
*Location is within area formerly designated nonattainment for total suspended particulate matter (TSP) or within 50 kilometers of such area.

(c) Quantification of the changes in plan allowable emissions from the affected sources; estimates of changes in current actual emissions from affected sources or, where appropriate, quantification of changes in actual emissions from affected sources through calculations of the differences between certain baseline levels and allowable emissions anticipated as a result of the revision.

Estimated changes in current actual emissions from affected sources: none. Permits for affected sources currently contain work practice standards and opacity limits to regulate PM emissions, and will continue to contain work practice standards and opacity limits under other state rules. [See Table 2 in paragraph (g).]

(d) The State's demonstration that the national ambient air quality standards, prevention of significant deterioration increments, reasonable further progress demonstration, and visibility, as applicable, are protected if the plan is approved and implemented. For all requests to redesignate an area to attainment for a national primary ambient air quality standard, under section 107 of the Act, a revision must be submitted to provide for the maintenance of the national primary ambient air quality standards for at least 10 years as required by section 175A of the Act.

Because actual emissions are not expected to change, pursuant to section 110(l) of the CAA, there will be no impact on national ambient air quality standards (NAAQS), prevention of significant deterioration (PSD) increments, reasonable further progress (RFP), nor visibility. The regulations for sulfur storage and handling facilities, Rules 62-212.600 and 62-296.411, F.A.C., are no longer necessary. At the time these regulations were written, in 1985, there was concern that total suspended particulate matter levels in Florida would be negatively impacted by increased sulfur handling and storage operations to such an extent as to warrant additional facility-specific work practices and monitoring. This has turned out not to be the case. The particulate matter emissions from these facilities are negligible. Chart 1 below shows a comparison of the emissions of PM from the sulfur handling and storage emissions units at each facility to the PM emissions from the entire facility to show how negligible the sulfur PM emissions are.



Rule 62-212.600, F.A.C., is not required because the “General Preconstruction Review Requirements” and “Prevention of Significant Deterioration (PSD)” provisions of Rules 62-212.300 and 62-212.400, F.A.C., respectively, can be applied, instead of the sulfur-specific requirements of paragraph 62-212.600(2)(a), F.A.C., to evaluate potential particulate matter ambient air quality impacts. The sulfur deposition analysis required by paragraph 62-212.600(2)(b), F.A.C., is unnecessary because there is no standard to compare the results with to demonstrate compliance.

The specific requirements of Rule 62-296.411, F.A.C., are not required because the “General Pollutant Emission Limiting Standards” of Rule 62-296.320, F.A.C., and, for some emissions units, the PM RACT (Reasonably Available Control Technology) requirements of Rule 62-296.711, F.A.C., can be applied to adequately control these negligible particulate matter emissions. The control techniques and work practice standards found in Rule 62-296.411, F.A.C., to control unconfined emissions of particulate matter can also be required by paragraph 62-296.320(4)(c), F.A.C., which prohibits the emission of unconfined particulate matter without taking reasonable precautions to prevent such emissions. In addition, for existing sulfur handling, sizing, screening, crushing and grinding operations in the former total suspended particulate (TSP) nonattainment areas or within 50 kilometers of such former TSP nonattainment areas, paragraph 62-296.711(2)(a) generally imposes a 5% opacity limit, except where an emissions unit has received a determination of BACT (Best Available Control Technology) or the emissions are insignificant enough to be exempted by the criteria listed in subsection 62-296.700(2), F.A.C. [See also Table 2 in paragraph (g) for a comparison of requirements.]

The following pie charts indicate that visible emissions have been well under the opacity limits for the sulfur storage and handling emissions units regardless of an emissions unit’s opacity limit. The majority of the tests show that there were no visible emissions.

Results of 205 Visible Emissions Tests conducted in 2010-2011 for Sulfur Storage & Handling Emissions Units with a 10% Opacity Limit

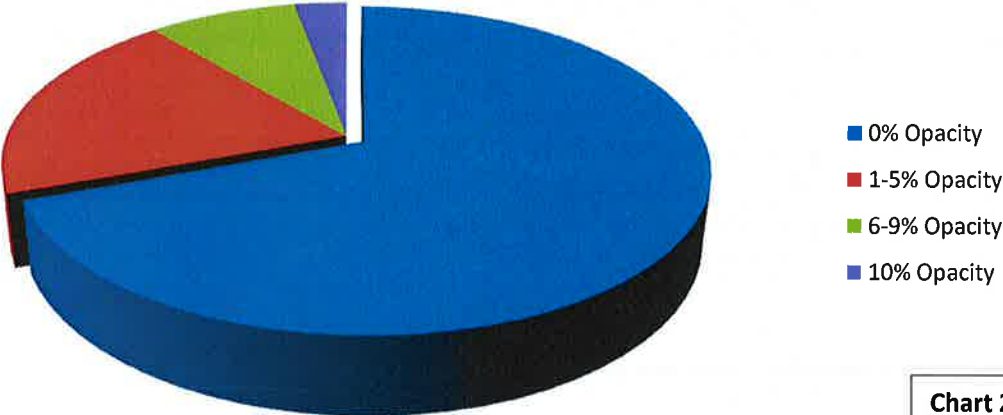


Chart 2

Results of 14 Visible Emissions Tests conducted in 2010-2011 for Sulfur Storage & Handling Emissions Units with a 15% Opacity Limit

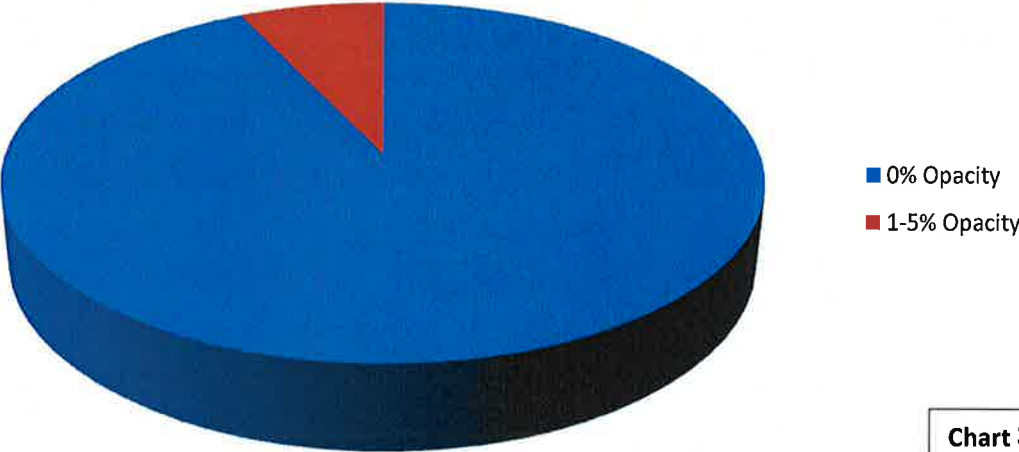


Chart 3

**Results of 66 Visible Emissions Tests conducted in 2010-2011
for Sulfur Storage & Handling Emissions Units with a 20% Opacity Limit**

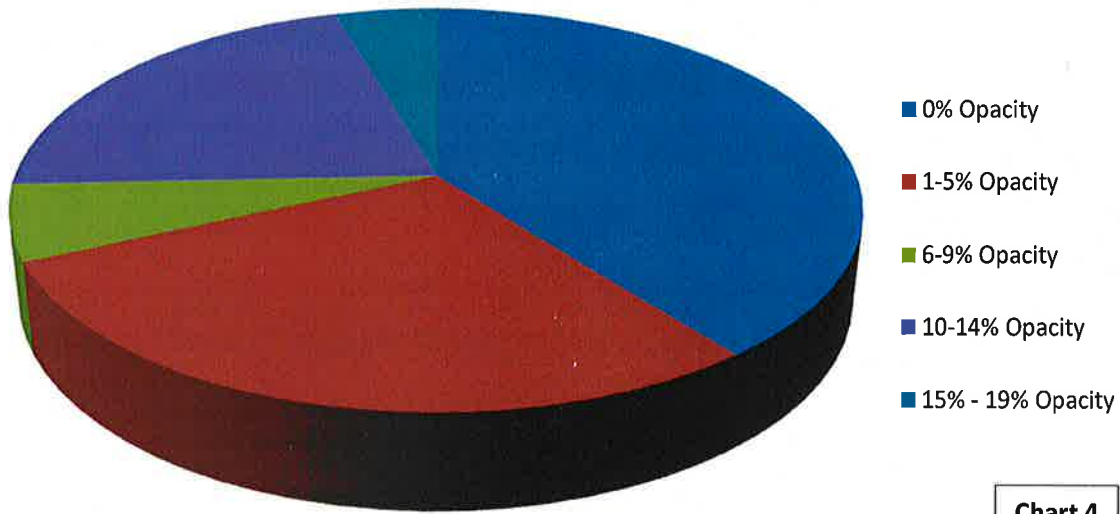


Chart 4

(e) Modeling information required to support the proposed revision, including input data, output data, models used, justification of model selections, ambient monitoring data used, meteorological data used, justification for use of offsite data (where used), modes of models used, assumptions, and other information relevant to the determination of adequacy of the modeling analysis.

As there were no emissions rates to change, no modeling has been conducted.

(f) Evidence, where necessary, that emission limitations are based on continuous emission reduction technology.

Continuous emission reduction technology is not applicable.

(g) Evidence that the plan contains emission limitations, work practice standards and recordkeeping/reporting requirements, where necessary, to ensure emission levels.

Evidence that the plan contains opacity limitations and work practice standards necessary to ensure no increase in PM emission levels is set forth in Table 2, below:

Table 2 – Impact of Rule 62-296.411 Removal on Sulfur Storage and Handling Facilities with Emissions Units (EUs) currently regulated by Rule 62-296.411, F.A.C.						
Facility ID	County	Particulate Matter Emissions Limits <i>with</i> Rule 62-296.411		Particulate Matter Emissions Limits <i>without</i> Rule 62-296.411 (i.e., limited by Rule 62-296.320, General Pollutant Emission Limiting Standards; Rule 62-296.711 Materials Handling, Sizing, Screening, Crushing and Grinding Operations; or other permit condition.)		
		Control Techniques and Work Practices required to minimize particulate matter emissions?	Visible Emission Limit (% Opacity)	Control Techniques and Work Practices required to minimize particulate matter emissions?	Visible Emission Limit (% Opacity)	Visible Emissions Limit Rule Cite
0470002	Hamilton	Yes	20	Yes	20	62-296.320
0570005	Hillsborough	Yes	10	Yes	10	Air Construction (AC) permit limit
0570008	Hillsborough	Yes	10 or 15	Yes	10 or 15	AC permit limit; Each EU limit < 1 TPY
0570082	Hillsborough	Yes	10 or 15	Yes	20	62-296.320; Each EU limit < 1 TPY
0570100	Hillsborough	Yes	10 or 15	Yes	20	62-296.320; Each EU limit < 1 TPY
0570455	Hillsborough	Yes	10 or 15	Yes	20	62-296.320; Each EU limit < 1 TPY
0570477	Hillsborough	Yes	10 or 15	Yes	20	62-296.320; Each EU limit < 1 TPY
1050046	Polk	Yes	20	Yes	5, 10, or 20	62-296.711(2)(a); 5 or 10 unless obtain EU limits to meet PM RACT exemption criteria (e.g., EU limit < 1 TPY)
1050055	Polk	Yes	20	Yes	5, 10, or 20	62-296.711(2)(a); 5 or 10 unless obtain EU limits to meet PM RACT exemption criteria (e.g., EU limit < 1 TPY)
1050059	Polk	Yes	20	Yes	5, 10, or 20	62-296.711(2)(a); 5 or 10 unless obtain EU limits to meet RACT exemption criteria (e.g., EU limit < 1 TPY)
1130005	Santa Rosa	Yes	20	Yes	20	62-296.320

(h) Compliance/enforcement strategies, including how compliance will be determined in practice.

Compliance with opacity standards will be determined by EPA Method 9.

In summary, application of the general particulate matter control requirements to the sulfur storage and handling facilities will provide adequate protection of human health, the environment, and the NAAQS, following the removal from the SIP of the specific particulate matter rules for sulfur storage and handling facilities, Rules 62-212.600 and 62.296.411, F.A.C.

(i) Special economic and technological justifications required by any applicable EPA policies, or an explanation of why such justifications are not necessary.

Not applicable.

2.3. Exceptions

Not applicable.

Legal Authority

Chapter 403 of the Florida Statutes (F.S.), entitled “Environmental Control,” provides the legal framework for most of the activities of the air resource management program within the Florida Department of Environmental Protection (DEP). Except as provided at sections 403.8055 and 403.201, F.S., for fast-track rulemaking and the granting of variances under Chapter 403, F.S., respectively, Chapter 120, F.S., Florida’s “Administrative Procedure Act,” sets forth the procedures DEP must follow for rulemaking, variances, and public meetings. The most recent version of the Florida Statutes can be found online at <http://www.leg.state.fl.us/Statutes>.

The principal sections of Chapter 403, F.S., that grant DEP authority to operate its air program are listed below. Authority to develop and update Florida’s State Implementation Plan (SIP) and 111(d) Designated Facilities Plan is expressly provided by subsection 403.061(35), F.S., which provides that “the department shall have the power and the duty to control and prohibit pollution of air and water in accordance with the law and rules adopted and promulgated by it and, for this purpose, to ... exercise the duties, powers, and responsibilities required of the state under the federal Clean Air Act, 42 U.S.C. ss. 7401 et seq.”

- 403.031 Definitions, including the definition of “regulated air pollutant” (403.031(19)).
- 403.061 Authority to promulgate plans to provide for air quality control and pollution abatement (403.061(1)); adopt rules for the control of air pollution in the state (403.061(7)); take enforcement action against violators of air pollution laws, rules and permits (403.061(8)); establish and administer an air pollution control program (403.061(9)); set ambient air quality standards (403.061(11)); monitor air quality (403.061(12)); require reports from air pollutant emission sources (403.061(13)); require permits for construction, operation, and modification of air pollutant emission sources (403.061(14)); and exercise the duties, powers, and responsibilities required of the state under the federal Clean Air Act (403.061(35)).
- 403.087 Authority to issue, deny, modify and revoke permits.
- 403.0872 Authority to establish an air operating permit program as required by Title V of the Clean Air Amendments of 1990.
- 403.0877 Authority to require engineering certification of permit applications.
- 403.121 Authority to seek judicial and administrative remedies for violations.
- 403.131 Authority to seek injunctive relief for violations.
- 403.141 Authority to find civil liability for violations.
- 403.161 Authority to assess civil and criminal penalties for violations.
- 403.182 Authority for local pollution control programs.
- 403.201 Authority to grant variances.
- 403.716 Authority to require training of medical waste incinerator operators.
- 403.8052 Authority to establish a Small Business Assistance Program for small-business sources of air pollutant emissions.

- 403.8055 Authority to adopt U.S. Environmental Protection Agency (EPA) standards by reference through a fast-track process.
- 403.814 Authority to allow use of general permits (permits-by-rule) for minor sources.

Other statutory authorities (outside of Chapter 403, F.S.) for Florida's air resource management program are as follows:

- 120.569 Authority of agency head to issue an emergency order in response to an immediate threat to public health, safety, or welfare.
- 316.2935 Authority to prohibit the sale and operation of motor vehicles whose emission control systems have been tampered with and to prohibit the operation of motor vehicles that emit excessive smoke.
- 320.03 Authority to establish an Air Pollution Control Trust Fund and use \$1 fee on every motor vehicle license registration sold in the state for air pollution control purposes, including support of approved local air pollution control programs.
- 376.60 Authority to establish a fee for asbestos removal projects.

Rules adopted by DEP under its statutory authority are codified in the Florida Administrative Code (F.A.C.). The most recent versions of the F.A.C. rules can be found online at <https://www.flrules.org>. Rule chapters containing SIP or 111(d) State Plan provisions are as follows:

- 62-204 Air Pollution Control – General Provisions
- 62-210 Stationary Sources – General Requirements
- 62-212 Stationary Sources – Preconstruction Review
- 62-243 Tampering with Motor Vehicle Air Pollution Control Equipment
- 62-252 Gasoline Vapor Control
- 62-256 Open Burning
- 62-296 Stationary Sources – Emission Standards
- 62-297 Stationary Sources – Emissions Monitoring

Other air-related DEP rule chapters—not part of the SIP or 111(d) State Plan—include:

- 62-213 Operation Permits for Major Sources of Air Pollution (Title V)
- 62-214 Requirements for Sources Subject to the Federal Acid Rain Program
- 62-257 Asbestos Program

Materials Proposed to be Removed from the SIP

In this section of the submittal, the two rules proposed for removal from the SIP are arranged by F.A.C. rule chapter and shown as last incorporated into the SIP by EPA.

Rule 62-212.600, F.A.C., as amended 3/13/96, has been incorporated into the SIP and is shown here. Amendments to this rule were adopted effective 8/17/00 and submitted to EPA as part of proposed SIP revision 2000-01; however, this SIP revision has not been acted on and is being withdrawn as part of this submittal. Therefore, the 8/17/00 amendments are not shown here.

Rule 62-296.411, F.A.C., as amended 1/1/96, has been incorporated into the SIP and is shown here. It has not been amended since 1/1/96.

Chapter 62-212, Rule 62-212.600, F.A.C., Proposed for Removal

62-212.600 Sulfur Storage and Handling Facilities.

(1) Applicability. The requirements of this rule apply to proposed new or modified sulfur storage and handling facilities. These requirements supplement, but in no case supersede, all other applicable requirements of Rules 62-212.300, 62-212.400, and 62-212.500, F.A.C.

(2) Preconstruction Review Requirements.

(a) Ambient Air Quality Analysis. The owner or operator of any proposed new or modified sulfur storage and handling facility that is to be located within five kilometers of either a particulate matter air quality maintenance area or a PSD Class I area shall provide the Department with an analysis of the probable particulate matter ambient air quality impacts that could result from the operation of the facility, in accordance with Rule 62-212.600(3), F.A.C. Emission Estimates, and Rule 62-204.220(4), F.A.C., Air Quality Models.

(b) Sulfur Deposition Analysis. The owner or operator of any proposed new or modified sulfur storage and handling facility shall provide the Department with an analysis of the probable annual and maximum monthly sulfur deposition rates that could occur as a result of the operation of the facility. The particle size distribution used in the model shall be determined in accordance with the provisions of Rule 62-212.600(3), F.A.C.

(c) Postconstruction Monitoring. The owner or operator of any proposed new or modified sulfur storage and handling facility shall conduct postconstruction air quality and deposition monitoring of sulfur particulate emissions from the facility for two years from the date of issuance of the initial air operation permit for the facility, and, through the permitting process, shall determine the period of time, if any, such monitoring must be continued. The data collected shall be provided to the Department as specified in the permit. All ambient air quality monitoring

shall be done using the appropriate ambient test method(s) referenced in Rule 62- 204.220(3), F.A.C. Particulate deposition monitoring shall be done in accordance with the provisions of DEP Reference Method for Monitoring Deposition of Sulfur Particulate, hereby adopted and incorporated by reference.

(d) Exemptions. Any sulfur storage and handling facility with a throughput of elemental sulfur in all forms of less than 5,000 tons per year shall be exempt from the provisions of Rule 62-212.600(a), (b), and (c), F.A.C.

(3) Emission Estimates.

(a) Except as otherwise provided in this rule, the particulate matter emission factor equations published by the U. S. Environmental Protection Agency in Section 13.2, Compilation of Air Pollution Emission Factors, AP-42, 5th Edition, Volume I, January 1995, hereby adopted and incorporated by reference, shall be used to estimate the sulfur particulate emissions from solid sulfur storage and handling facilities. The emission factors referenced above shall be used to estimate the emitted sulfur particulate that would be measured by a high volume air sampler as specified in the reference sampling method for total suspended particulate.

(b) All emissions estimates generated pursuant to this rule shall be supported by data that explain the basis for selecting the variables in the emission factor equations (e.g. moisture content, silt content, ambient wind speed, etc.). The emission factor variables shall be selected to represent the probable conditions for each operation under normal operating conditions. The silt content data used in the referenced equations (minus 200 mesh U. S. screen) shall be based on or represent data obtained by dry sieving. The dry sieving shall be performed in accordance with methods specified in Rule 62-212.600(3)(a), F.A.C., except that sieving shall not be performed for more than 40 minutes. Drying of the solid sulfur prior to sieving shall be performed at a temperature of 75 +/- 5 degrees C. Appropriate values shall be selected to estimate both the maximum annual average and maximum daily (24 hour) average emission rates for each emissions unit within the facility.

(c) Sulfur Deposition Rate Emission Factors. The emission factors used to calculate the probable elemental sulfur deposition rates resulting from the operation of a sulfur storage or handling facility shall be estimated using the following procedure:

1. Solid Sulfur Storage and Handling Facility Deposition Emission Factors.

a. Estimate the weight of all particles emitted to the atmosphere. The suspended particulate emission estimates obtained from the procedures in this rule represent the weight of the 0-30 micron particles emitted prior to applying

any control measures. To estimate the weight of all particles emitted to the atmosphere prior to applying any control measures, multiply the 0-30 micron emission rate by 2.1.

b. Determine the specific particle size ranges from 0- 300 microns that will be used in the deposition calculation. Use a sufficient number of size intervals such that errors in calculated deposition rates resulting from the variation in the settling velocity (in still air) of the particles within each interval are minimized.

c. Using the particle size distribution equation in Rule 62-212.600(3)(c)4., F.A.C., and the estimated weight of all particles emitted to the atmosphere, calculate the weight of particles in each of the size ranges to be used in the deposition calculations.

2. Molten Sulfur Storage and Handling Facility Deposition Emission Factors.

a. Determine the weight of all particles emitted to the atmosphere from an emissions unit at a molten sulfur handling facility and the size distributions of these particles in the 0-300 micron size range.

b. Determine the specific particle size ranges from 0- 300 microns that will be used in the deposition calculations. Use a sufficient number of size intervals such that errors in calculated deposition rates resulting from the variations in the settling velocity (in still air) of the particles within each interval are minimized.

c. Using the particle size distribution equation in Rule 62-212.600(3)(c)4., F.A.C., and the weight of all particles emitted to the atmosphere, calculate the weight of particles in each of the size ranges to be used in the deposition calculations.

3. If particulate control measures would be applied to limit the emission of any of the particles in this size range (0-300 microns), compute the collection efficiency of the control measures for each particle size range to be used in the deposition calculations using published collection efficiency data or actual test data for a similar facility or operation. Use this information or actual emissions test data to estimate the probable particle size distribution of the sulfur particles emitted to the atmosphere after the application of all control measures.

4. For calculating the deposition rates, determine the representative weight of the particles emitted to the atmosphere in each interval as specified above and assume that all particles within each selected interval have a particle diameter equal to the mass mean diameter of the range. The mass mean diameter is given by:

$$d = \frac{[(d_2^3 + d_1^2 d_2 + d_1 d_2^2 + d_1^3)]^{1/3}}{4}$$

where: d_1 is the lower bound of the particle size interval and d_2 is the upper bound of the particle size interval.

The particle size distribution equation is given by:

$$D = 236.4e^{-0.0423W}$$

where: D is the particle size diameter (microns) and W is the weight percent greater than stated size.

Specific Authority 403.061 FS. Law Implemented 403.031, 403.061, 403.087 FS. History—Formerly 17-2.540, 17-212.600, Amended 11-23-94, 1-1-96, 3-13-96.

Chapter 62-296, Rule 62-296.411, F.A.C., Proposed for Removal

62-296.411 Sulfur Storage and Handling Facilities.

Except for those facilities exempted in subsection 62-296.411(5), F.A.C., or for handling of vatted sulfur as otherwise provided in this subsection, no person shall cause, suffer or allow elemental sulfur to be stored, handled or transported within the state in crushed bulk or slate form or in any form other than standard sulfur pellets or in molten form, except that sulfur may be transferred within the boundaries of a single facility in other forms. Facilities using standard sulfur pellets or molten sulfur, or sulfur vating facilities, may be permitted only in conformance with the following criteria and other applicable Department standards.

(1) Molten Sulfur Storage and Handling Facilities – All molten sulfur facilities shall employ, as a minimum, the following practices to minimize the emission of sulfur particulate matter into the atmosphere. Other relevant detailed requirements shall be specified, as necessary, in the permits for the facility.

(a) All molten sulfur transfer shall be through enclosed piping systems where feasible and practical. In user facilities, molten sulfur may be transferred by covered trench or a movable spout which is positioned over a receiving pit. Contact surfaces between movable unloading arms and stationary pipes shall seat effectively around the entire circumference to minimize spillage.

(b) All areas surrounding points where molten sulfur pipes are routinely disconnected and areas where molten sulfur is transferred to trucks or railcars shall be paved and curbed within 20 feet of the point of disconnection or transfer to contain any spilled molten sulfur, or shall be provided with noncorrosible drip pans or other secondary containment, positioned to collect spills, that are adequate to contain amounts of sulfur that may escape during routine disconnection, reconnection or operation of the piping system.

(c) Emissions of sulfur particulate matter from molten sulfur storage tanks and transfer systems in particulate matter air quality maintenance areas or within five kilometers of such areas shall not exceed 0.03 pounds per hour per thousand tons of storage capacity.

(d) All spilled molten sulfur shall be collected and properly disposed of whenever the containment area is filled to one-half its containment capacity, or monthly, whichever is more frequent. Spills of molten sulfur outside of a containment area, or where subject to vehicular traffic, shall be collected and disposed of as soon as possible, but no later than 24 hours after the spill occurs. Drip pans or other secondary containment shall be cleaned as needed to prevent exceedance of capacity, but at least weekly.

(e) All vent surfaces shall be cleaned monthly to remove captured particles.

(f) All owners and operators of molten sulfur storage and handling facilities shall maintain records of spills outside of containment areas and of collection and disposal of spilled sulfur. Such records shall be retained for a minimum of two years and shall be available for inspection by the Department upon request.

(g) In any particulate matter air quality maintenance area, PSD Class I area, or within five kilometers of such an area, visible emissions from any emission point in a molten sulfur facility shall not exceed 10 percent opacity (six minute average). In other areas visible emissions from any emission point in a molten sulfur facility shall not exceed 20 percent opacity (six minute average).

(h) Operational procedures approved by the Department shall be established to minimize spills from any movable loading arm or pipe upon disconnection, reconnection or operation.

(i) Visible emissions of sulfur particulate matter during ship unloading in a particulate matter air quality maintenance area shall not exceed 15 percent (six minute average).

(j) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

1. The test method for visible emissions shall be DEP Method 9, incorporated in Chapter 62-297, F.A.C.

2. The test method for particulate emissions shall be EPA Method 5, incorporated and adopted by reference in Chapter 62-297, F.A.C. An acetone wash shall be used. A filter box or probe heat shall not be used. Use one point sampling in the center of the temporary stack extension erected over and completely covering the center tank vent. This stack extension shall be no more than ten feet in height and provide a minimum six inch clearance from the tank vent and shall be 12 inches in diameter beginning at the top of the tapered section. The sampling port shall be a minimum of eight stack diameters downstream from the top of the roof vent and a minimum of two stack diameters upstream from the top of the temporary stack. If the tank is equipped with other vents, determine the total volume of gas vented from the tank during the sampling period. Multiply the weight of particulate collected by the ratio of the total volume to the actual volume sampled corrected to standard temperature and pressure and compute the test result with the adjusted weight of particulate collected. Determine and report the average wind speed during each test run at a point above and in the vicinity of the tank.

3. Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

(2) Solid Sulfur Storage and Handling Facilities – All solid sulfur storage and handling facilities shall employ as a minimum, the following practices to minimize the emission of sulfur particulate matter into the atmosphere. Other relevant detailed requirements shall be specified, as necessary, in the permits for the facility including, where appropriate, a minimum rate or amount of moisture to be applied by water spray systems.

(a) Marine Vessel Unloading.

1. Solid sulfur unloaded from marine vessels shall only be done by:
 - a. A self-unloading vessel of a design approved by the Department; or
 - b. A tight-lipped clamshell bucket (the clamshell bucket shall be inspected daily by qualified personnel during use to assure a tight seal); or
 - c. A continuous unloader.
2. Solid sulfur shall not be unloaded by clam shell bucket or any approved equivalent method from marine vessels when the wind speed exceeds 18 mph for any five minute period.
3. A floating boom shall be deployed so as to contain sulfur that may be spilled in the water during the unloading process whenever a clamshell bucket or equivalent unloading method is employed. Any sulfur floating in the contained area shall be reclaimed as soon as possible after unloading, but no later than 24 hours after unloading is completed.
4. The hopper receiving solid sulfur unloaded from marine vessels shall be constructed with wind walls and a top with slots provided to enable entry and exiting of a clamshell bucket. The walls shall be constructed on at least three sides and the height of the walls shall be a minimum of 1.5 times the height of the clamshell bucket.
5. The clamshell bucket shall be positioned within the wind walls prior to discharging sulfur into the receiving hopper.
6. The clamshell bucket shall be closed completely before being withdrawn from the receiving hopper and returned to the marine vessel.
7. The hopper receiving solid sulfur unloaded from marine vessels shall be equipped with a water spray system located around the periphery of the receiving hopper. The water spray system shall contain an effective wetting agent and shall be operated continuously during all unloading or transfer operations.
8. Operational procedures approved by the Department shall be established to minimize sulfur particulate emissions from marine vessel unloading operations.

(b) Solid Sulfur Transfer.

1. Sulfur Transferred by Conveyor Belt Systems.

- a. The conveyor belts shall be of a deep-V design.
- b. The maximum incline of any conveyor belt shall not exceed 15 degrees.
- c. All conveyor-to-conveyor and all hopper-to-conveyor transfer points shall be enclosed.
- d. Conveyor transfer systems shall include water spray systems at transfer points. The water spray systems shall spray water containing an effective wetting agent and shall be operated continuously at all times when transfer is occurring.
- e. Hoppers receiving solid sulfur transferred by conveyor belt systems shall be constructed with wind walls enclosing the top and a minimum of three sides of the receiving hopper.

f. No vertical drop at any conveyor transfer point shall exceed five feet.

2. Sulfur Transfer by Pay-loaders or Mechanical Equipment.

- a. The equipment used to transfer solid sulfur shall not exceed 75 percent bucket capacity.
- b. Vehicles used to transfer solid sulfur within a solid sulfur handling facility shall operate at speeds not exceeding 15 mph.
- c. Maximum drop height when transferring solid sulfur by pay-loader or mechanical equipment shall not exceed five feet.
- d. Hoppers not within an enclosure that receive solid sulfur transferred by pay-loaders or mechanical equipment shall be constructed with a wind wall enclosing the top and a minimum of three sides of the receiving hopper.
- e. Only rubber-tired pay-loaders and mechanical equipment shall be allowed to be operated in solid sulfur storage areas.
- f. The transfer of solid sulfur by pay-loader or mechanical equipment outside of an enclosure shall not be permitted when the wind speed exceeds 18 mph for any five minute period.
- g. All paved roads within a solid sulfur handling facility shall be wetted daily to reduce total sulfur particulate emissions.

(c) Solid Sulfur Storage.

1. Areas used for the storage of solid sulfur in a particulate matter air quality maintenance area, PSD Class I area, or within five kilometers of such an area, or at any marine terminal facility, shall be entirely housed in a vented

structure completely enclosed by roof and walls, and shall be paved with an asphaltic material or Department approved equivalent. The vented emissions shall not exceed 0.03 pounds per hour per thousand tons of storage capacity.

2. Areas used for the storage of solid sulfur in all areas not covered by subparagraph 62-296.411(2)(c)1., F.A.C., above, shall be paved with an asphaltic material or Department approved equivalent and shall be surrounded by a berm at least three feet in height, except as necessary to permit vehicle access.

3. The stacker conveyor shall be equipped with a chute that shall extend to within five feet of the storage pile during times when sulfur is being transferred to storage. The vertical drop height may exceed five feet when the sulfur storage area is enclosed and an overhead shuttle conveyor is utilized to transfer the sulfur to storage. However, in some situations the sulfur pile shall be formed so that whenever possible the material shall be transferred to the side of an already existing pile.

4. Surfaces within the sulfur storage area traveled by pay-loaders or mechanical equipment used to transfer solid sulfur shall be periodically wetted with an effective wetting agent to minimize unconfined sulfur particulate emissions.

5. Surfaces within the sulfur storage area traveled by pay-loaders or mechanical equipment transferring solid sulfur shall be cleaned at least daily by spraying with water to prevent excessive accumulation of sulfur particulate.

6. For purposes of fire control, precautionary measures shall include, but shall not necessarily be limited to the following:

a. All enclosed sulfur storage areas shall be equipped with water spray systems adequate to provide for rapid fire suppression.

b. Mobile and stationary equipment operated in the storage area shall be cleaned daily and maintained to minimize fire potential.

c. Electrical motors and other electrical fixtures used in the sulfur storage area shall be explosion proof.

d. Smoking within 100 feet of the solid sulfur storage area shall be prohibited.

(d) Truck and Railcar Unloading.

1. Bottom Unloading Vehicles.

a. The hopper used to receive solid sulfur from trucks or railcars shall be housed within a structure that covers the top and at least two sides of the receiving hopper. The structure shall have wind walls on at least two sides that

extend from the ground to a height at least 1.5 times the drop distance between the vehicle and the top of the receiving hopper.

b. The hopper used to receive solid sulfur from trucks or railcars shall be equipped with a water spray system that shall deliver water containing an effective wetting agent that will be in operation during all sulfur transfer operations.

2. Rotary Railcar Unloading.

a. The hopper used to receive solid sulfur from railcars using rotary unloading shall be housed within a structure that completely covers the top and at least two sides of the railcar and hopper.

b. The structure housing the railcar and hopper shall be vented to an air pollution control device. Emissions from the device shall not exceed 0.03 grains per dscf.

c. The structure housing the railcar and hopper shall be equipped with a water spray system that shall be in continuous operation during all solid sulfur unloading operations including:

(i) Water sprays installed at the open sides of the structure that shall provide a water mist spray curtain to minimize the escape of particulate matter from the structure during the unloading process.

(ii) A water spray system containing an effective wetting agent that is applied directly to the solid sulfur during the unloading process.

(e) In any particulate matter air quality maintenance area, PSD Class I area, or within five kilometers of such an area, visible emissions from any emission point in a solid sulfur facility shall not exceed five percent opacity (six minute average). In other areas visible emissions from any emission point in a solid sulfur facility shall not exceed 10 percent opacity (six minute average).

(f) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

1. The test method for visible emissions shall be DEP Method 9, incorporated in Chapter 62-297, F.A.C.

2. The test method for particulate emissions shall be EPA Method 5, incorporated and adopted by reference in Chapter 62-297, F.A.C. An acetone wash shall be used. A filter box or probe heat shall not be used.

3. Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

(3) Sulfur Vating and Sulfur Vat Reclamation Facilities. Sulfur vating or sulfur vat reclamation facilities shall not be permitted within any particulate matter nonattainment, PSD Class I area, or within five kilometers of such

areas. All sulfur vating and vat reclamation facilities shall employ, as a minimum, the following practices to minimize the emission of sulfur particulate matter into the atmosphere. Other relevant detailed requirements shall be specified, as necessary, in the permits for the facility.

(a) The molten sulfur pouring arm shall be positioned within five feet of the surface of the vat to reduce splattering of molten sulfur.

(b) The forms used for forming the vat shall have smooth surfaces.

(c) The sulfur vat and forms shall be inspected by trained personnel continually during each pour to assure that any leakage is minimized.

(d) Sulfur pouring to the vat shall not be permitted when the wind speed exceeds 18 mph for any five minute period.

(e) The owner or operator shall establish, and the equipment operators shall attend, a training program on equipment operating practices for the minimization of unconfined sulfur particulate matter emissions.

(f) If a mechanical sulfur vat reclamation procedure is used, the following practices shall be employed.

1. Only rubber-tired pay-loaders and excavating equipment shall be allowed to operate on the surface of the vat.

2. Excavators shall be equipped with a water spray system located near the claw used for reclaiming sulfur. The water spray system shall be equipped with spray nozzles and shall spray water containing an effective wetting agent. Sulfur reclamation from the vat shall only be allowed when the water spray system is in operation.

3. Vat reclamation and reclaimed sulfur transfer shall not be permitted when the wind speed exceeds 18 mph for any five minute period.

4. Pay-loaders transferring reclaimed sulfur shall not exceed 75 percent bucket capacity.

5. Vehicles operating in the sulfur reclamation area shall not exceed speeds of 15 mph.

6. Maximum drop height when transferring reclaimed sulfur shall not exceed five feet.

7. The exterior walls of the vat shall be maintained as much as practical to serve as a wind break during reclamation and melting.

8. A wind screen shall be constructed to enclose the top and three sides of the static melter used to melt the reclaimed sulfur.

9. The static melter shall be located as close as practical to the sulfur reclamation area. The particulate matter emissions from the control device shall not exceed 0.03 grains per dscf.

10. During vat reclamation, all roads in the reclamation, transfer, storage and remelting areas shall be cleaned weekly by pay-loaders to prevent excessive accumulation of reclaimed sulfur.

11. During vat reclamation, all roads in the reclamation, transfer, storage and remelting areas shall be wetted twice daily with water to suppress unconfined sulfur particulate matter emissions.

12. All reclaimed sulfur shall be remelted prior to any expected shut-down of the static sulfur melter for a period in excess of 10 days.

13. Any spilled sulfur extending more than 30 feet from the base of the vat shall be recovered as expeditiously as possible but no less frequently than daily.

14. Any spills within a 30 foot zone around the base of the vat shall be recovered prior to allowing any vehicle traffic within that zone, but no less frequently than monthly.

15. For purposes of fire control, precautionary measures shall include, but shall not necessarily be limited to the following:

a. The vat area shall be inspected for fires during each shift.

b. An adequately sized water main shall be installed around the vat with risers equipped with sprinkler heads. In addition, fire hose connections shall be provided on all sides of the vat.

c. All mobile and stationary equipment operated on the surface of the vat shall be cleaned weekly and maintained to minimize fire potential.

d. Electrical motors and other electrical fixtures used in the vat area shall be explosion proof.

e. Smoking within 100 feet of the vat shall be prohibited.

f. The maximum height of the vat shall be limited to 30 feet to minimize the generation of fires from falling sulfur.

(g) If sulfur vat reclamation by in-situ melting is used, the following practices shall be employed. (Reserved).

(4) Alternate Emission Control Methods for Sulfur Storage and Handling Facilities. If the owner or operator of any facility subject to the provisions of subsections 62-296.411(1) through (3), F.A.C., above, wishes to utilize an alternate method or control technology for sulfur particulate emissions that would result in emissions less than or equal to those achieved by the equivalent methods or technologies specified in subsection 62-296.411(1) through (3), F.A.C., such owner or operator may request that the Department approve such alternate method or control. The Secretary or the Secretary's designee shall specify by order each alternate method or control technology approved in

accordance with this rule or shall issue an order denying such request. The request shall set forth the following information at a minimum.

(a) The specific emissions unit or emission point, and permit number if any, for which the alternate method or control technology is requested.

(b) The basis for the alternate method or control technology including documentation necessary to demonstrate that the proposed alternative will result in emissions less than or equal to those achieved by the method or control technology that is proposed to be replaced.

(5) Exempt Emissions Units or Facilities. The following emissions units or facilities designed primarily for receiving, storing or transferring elemental sulfur are exempt from certain provisions of Rule 62-296.411, F.A.C., as specified below.

(a) Any sulfur storage and handling facility with a throughput of elemental sulfur in all forms of less than 5,000 tons per year shall be exempt from the provisions of Rule 62-296.411, F.A.C.

(b) Any emissions unit of sulfur particulate that has total sulfur particulate emissions of less than one ton per year shall be exempt from the weight emission limiting standards in Rule 62-296.411, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.600(11), 17-296.411, Amended 11-23-94, 1-1-96.

Public Participation

Response to 40 CFR 51.102 Requirements

(a) Except as otherwise provided in paragraph (c) of this section and within the 30 day notification period as required by paragraph (d) of this section, States must provide notice, provide the opportunity to submit written comments and allow the public the opportunity to request a public hearing. The State must hold a public hearing or provide the public the opportunity to request a public hearing. The notice announcing the 30 day notification period must include the date, place and time of the public hearing. If the State provides the public the opportunity to request a public hearing and a request is received the State must hold the scheduled hearing or schedule a public hearing (as required by paragraph (d) of this section). The State may cancel the public hearing through a method it identifies if no request for a public hearing is received during the 30 day notification period and the original notice announcing the 30 day notification period clearly states: *If no request for a public hearing is received the hearing will be cancelled; identifies the method and time for announcing that the hearing has been cancelled; and provides a contact phone number for the public to call to find out if the hearing has been cancelled.*

The opportunity to submit written comments, request a public hearing, or participate in a public hearing, if requested, on the proposed SIP revision was advertised in the Florida Administrative Weekly (FAW) at least 30 days prior to the scheduled date of the hearing. Information regarding the date, place and time of the public hearing was included in the notice along with information on how to request the hearing or ascertain whether the hearing would be cancelled. A copy of the notice is included in this section. No hearing was requested, and none was held. Notice of cancellation of the hearing was provided as set forth in the notice of SIP revision.

(b) Separate hearings may be held for plans to implement primary and secondary standards.

Not applicable.

(c) No hearing will be required for any change to an increment of progress in an approved individual compliance schedule unless such change is likely to cause the source to be unable to comply with the final compliance date in the schedule. The requirements of §§51.104 and 51.105 will be applicable to such schedules, however.

Not applicable.

(d) Any hearing required by paragraph (a) of this section will be held only after reasonable notice, which will be considered to include, at least 30 days prior to the date of such hearing(s):

(1) Notice given to the public by prominent advertisement in the area affected announcing the date(s), time(s), and place(s) of such hearing(s);

The opportunity to submit comments, request a public hearing, or participate in a public hearing, if requested, on the proposed SIP revision was advertised in the FAW at least 30 days prior to the scheduled date of the hearing (see response (a)).

(2) Availability of each proposed plan or revision for public inspection in at least one location in each region to which it will apply, and the availability of each compliance schedule for public inspection in at least one location in the region in which the affected source is located;

The materials proposed to be removed from the SIP were made available for public inspection in the offices of the Division of Air Resource Management (DARM) and on the DARM website. The materials were also made accessible to the public through each of the DEP's district offices and in the offices of each DEP-approved local air pollution control program. The memoranda requesting that such information be made available by the district and local offices are included in this section.

(3) Notification to the Administrator (through the appropriate Regional Office);

The Region 4 office of the EPA was notified at least 30 days in advance of the scheduled hearing date and provided with copies of the materials proposed to be removed from the SIP. The pre-hearing submittal letter is included in this section.

(4) Notification to each local air pollution control agency which will be significantly impacted by such plan, schedule or revision;

Notification to affected local programs occurred with transmittal of the memoranda requesting that the material proposed to be removed from the SIP be made available for public inspection (see response (d)(2)).

(5) In the case of an interstate region, notification to any other States included, in whole or in part, in the regions which are significantly impacted by such plan or schedule or revision.

The states of Alabama, Georgia, and Mississippi were notified of the proposed SIP revision at least 30 days in advance of the scheduled date of the hearing. The notification letters are included in this section.

(e) The State must prepare and retain, for inspection by the Administrator upon request, a record of each hearing. The record must contain, as a minimum, a list of witnesses together with the text of each presentation.

Not applicable.

(f) The State must submit with the plan, revision, or schedule, a certification that the requirements in paragraph (a) and (d) of this section were met. Such certification will include the date and place of any public hearing(s) held or that no public hearing was requested during the 30 day notification period.

Certification is provided in the letter of submittal that the opportunity to submit comments, request a public hearing, or participate in a public hearing on the proposed SIP revision was noticed in accordance with the requirements of 40 CFR 51.102.

(g) Not applicable.

Notice of Opportunity to Submit Comments or Participate in Public Hearing

Florida Administrative Weekly

Volume 37, Number 41, October 14, 2011

GENERAL SUBJECT MATTER TO BE CONSIDERED: This is a technical meeting to discuss reductions in total nitrogen and total phosphorus from water quality improvement projects related to the Central Indian River Lagoon Basin Management Action Plan. The Total Maximum Daily Load for the Central Indian River Lagoon adopted in March 2009 requires reductions in the loadings of total nitrogen and total phosphorus sufficient to meet seagrass depth targets.

A copy of the agenda may be obtained by contacting: Ms. Mary Paulic, Department of Environmental Protection, 2600 Blair Stone Road, Watershed Assessment Section, MS #3565, Tallahassee, Florida 32399-2400 or by calling her at (850)245-8560.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Ms. Mary Paulic at (850)245-8560. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

The Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas announces a public meeting to which all persons are invited.

DATES AND TIMES: Thursday, November 3, 2011, 8:30 a.m. - 5:00 p.m.; Friday, November 4, 2011, 8:30 a.m. - 12:30 p.m.
PLACE: Nova Southeastern University Oceanographic Center, 8000 North Ocean Drive, Dania Beach, FL 33004

GENERAL SUBJECT MATTER TO BE CONSIDERED: The Southeast Florida Coral Reef Initiative (SEFCRI) Land Based Sources of Pollution (LBS) Technical Advisory Committee will hold its bi-annual meeting to update committee members and the public on the progress and status of projects currently being conducted. They will also assess the existing data, make recommendations as to what additional information is necessary/required, prioritize data gaps and recommend management action strategies for the future.

A copy of the agenda may be obtained by contacting: Katharine Tzadik by e-mail: Katharine.Tzadik@dep.state.fl.us, (305)795-1223, mail: 1277 N.E. 79th St./JK Causeway, Miami, FL 33138-4206.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 5 days before the workshop/meeting by contacting: Katharine Tzadik at email: Katharine.Tzadik@dep.state.fl.us. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

The Division of Air Resource Management announces a hearing to which all persons are invited.

DATE AND TIME: November 16, 2011, 10:00 a.m.

PLACE: Department of Environmental Protection, Division of Air Resource Management, 111 South Magnolia Drive, Suite 23, Tallahassee, Florida

GENERAL SUBJECT MATTER TO BE CONSIDERED: Pursuant to 40 CFR 51.102, the Department of Environmental Protection (DEP) announces the opportunity for the public to request a hearing or offer comments on a proposed revision to Florida's State Implementation Plan (SIP) under the Clean Air Act. Specifically, DEP proposes that the U.S. Environmental Protection Agency (EPA) remove from Florida's SIP two previously-approved Florida Administrative Code (F.A.C.) Rule 62-212.600, F.A.C., Sulfur Storage and Handling Facilities; and Rule 62-296.411, F.A.C., Sulfur Storage and Handling Facilities. Under this proposal, the two rule sections would be removed from the SIP but not from the F.A.C. Separate action would be required to repeal the rules from the F.A.C.

A public hearing will be held, if requested, at the date, time and place given above. It is not necessary that the hearing be held or attended in order for persons to comment on DEP's proposed submittal to EPA. Any request for a public hearing must be submitted by letter or e-mail: Marnie Brynes, Department of Environmental Protection, Division of Air Resource Management, 2600 Blair Stone Road, MS #5500, Tallahassee, Florida 32399-2400, email: Marnie.Brynes@dep.state.fl.us and received no later than November 14, 2011. Any comments must be submitted by letter or e-mail to Cindy Phillips at the above address or Cindy.Phillips@dep.state.fl.us, with a copy to Ms. Brynes, and received no later than November 14, 2011. If no request for a public hearing is received, the hearing will be cancelled, and notice of the cancellation will be posted at the following website: <http://sharepoint.dep.state.fl.us/PublicNotices/default.asp>.

Persons may also contact Ms. Brynes at (850)717-9029 to find out if the hearing has been cancelled. The materials comprising DEP's proposed SIP revision are accessible from the above website by clicking on the November 16 hearing link. The materials may also be inspected during normal business hours at the: DEP, Division of Air Resource Management offices, 111 S. Magnolia Dr., Suite 23, Tallahassee, Florida, or accessed with the aid of any DEP District Air Section or DEP-approved local air pollution control office.

A copy of the agenda may be obtained by contacting: Ms. Phillips by letter, e-mail or by calling: (850)717-9098.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Ms. Brynes at (850)717-9029 or email: Marnie.Brynes@dep.state.fl.us. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

For more information, you may contact: Ms. Phillips by letter, e-mail or by calling: (850)717-9098.

DEPARTMENT OF HEALTH

The **Board of Chiropractic Medicine** announces a telephone conference call to which all persons are invited.

DATE AND TIME: Tuesday, October 25, 2011, 10:00 a.m.
 PLACE: Meet Me Number: 1(888)808-6959, Conference Code: 9849329103; Department of Health, 4052 Bald Cypress Way, Tallahassee, Florida 32399-3257

GENERAL SUBJECT MATTER TO BE CONSIDERED: For cases previously heard by the panel.

A copy of the agenda may be obtained by contacting: Sherra W. Causey, Board of Chiropractic Medicine, 4052 Bald Cypress Way, Bin #C07, Tallahassee, Florida 32399-3257.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Sherra W. Causey. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting or hearing, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence from which the appeal is to be issued.

The **Board of Chiropractic Medicine** announces a public meeting to which all persons are invited.

DATE AND TIME: Friday, November 4, 2011, 8:30 a.m.
 PLACE: Rosen Plaza Hotel, 9700 International Drive, Orlando, Florida 32819, (407)996-9700

GENERAL SUBJECT MATTER TO BE CONSIDERED: General board business.

A copy of the agenda may be obtained by contacting: Sherra W. Causey, Board of Chiropractic Medicine, 4052 Bald Cypress Way, Bin #C07, Tallahassee, Florida 32399-3257 or access the web site: www.doh.state.fl.us/mqa/chiro/index.html.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting or hearing, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence from which the appeal is to be issued.

The **Board of Dentistry** announces a telephone conference call to which all persons are invited.

DATE AND TIME: October 24, 2011, 6:00 p.m.
 PLACE: Conference Call: 1(888)808-6959 when prompted, enter Conference Code: 2453454

GENERAL SUBJECT MATTER TO BE CONSIDERED: To discuss Dental Assisting issues.

A copy of the agenda may be obtained by contacting: Sue Foster, Executive Director, Department of Health, Board of Dentistry, 4052 Bald Cypress Way, BIN #C08, Tallahassee, Florida 32399-3258.

If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence upon which the appeal is to be made.

Those who are hearing impaired, using TDD equipment can call the Florida Telephone Relay System at 1(800)955-8771. Persons requiring special accommodations due to disability or physical impairment should contact: Sue Foster at (850)245-4474.

The **Board of Medicine, Finance & Statistics Committee** announces a telephone conference call to which all persons are invited.

DATE AND TIME: Monday, October 24, 2011, 3:00 p.m.
 PLACE: Conference Call: 1(888)808-6959, Conference Code: 284 344 0330

GENERAL SUBJECT MATTER TO BE CONSIDERED: General business of the committee.

A copy of the agenda may be obtained by contacting: Whitney Bowen, whitney_bowen@doh.state.fl.us, (850)245-4131, ext. 3517.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 10 days before the workshop/meeting by contacting: Whitney Bowen at email: whitney_bowen@doh.state.fl.us or call: (850)245-4131, ext. 3517. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).


Requests for Local/District Air Program Offices to Provide Assistance to Public



**Florida Department of
Environmental Protection**

Memorandum – Via Electronic E-mail

TO: Daniela Baru Broward County Department of Planning
 & Environmental Protection, Ft. Lauderdale
Patrick Wong Miami-Dade County Department of Environmental
 Resource Management, Miami
Steve Pace Regulatory & Environmental Services Department,
 Jacksonville
Jerry Campbell Hillsborough County Environmental Protection
 Commission, Tampa
Jodi Dittell Orange County Environmental Protection Department,
 Orlando
James Storner Palm Beach County Health Department,
 West Palm Beach
Peter Hessling Pinellas County Department of Environmental
 Management, Clearwater
John Hickey Sarasota County Natural Resources Department,
 Sarasota

FROM: Chad Stevens, Administrator 
Regulatory & Legislative Reform Program
Division of Air Resource Management

DATE: October 14, 2011

SUBJECT: Public Information Package - Notice of Opportunity to Submit Comments on
Proposed Revision to Florida's State Implementation Plan – Removal of Sulfur
Storage and Handling Rules

Notice is hereby given that, pursuant to 40 CFR 51.102, the Department of Environmental Protection is accepting comments and will hold a public hearing on a proposed revision to Florida's State Implementation Plan (SIP). Attached please find the notice of public hearing and opportunity to submit comments that was published October 14, 2011, in the Florida Administrative Weekly. The public and affected states are invited to present comments on the proposed SIP revision at the hearing, but may also submit written comments no later than November 14, 2011, by letter or e-mail to Ms. Marnie Brynes, Department of Environmental Protection, Division of Air Resource Management, 2600 Blair Stone Road, Mail Station 5500, Tallahassee, Florida 32399-2400, or Marnie.Brynes@dep.state.fl.us.

The materials comprising the proposed SIP revision are posted at <http://www.dep.state.fl.us/air/rules/regulatory.htm>. Please assist any member of the public who may contact you asking to view these materials.


www.dep.state.fl.us



Florida Department of
Environmental Protection

Memorandum- Via Electronic E-mail

TO: Rick Bradburn Northwest District
Chris Kirts Northeast District
Caroline Shine Central District
Pamala Vazques Southwest District
Lennon Anderson Southeast District
Ajaya Satyal South District

FROM: Chad Stevens, Administrator 
Regulatory & Legislative Reform Program
Division of Air Resource Management

DATE: October 14, 2011

SUBJECT: Public Information Package - Notice of Opportunity to Submit Comments on
Proposed Revision to Florida's State Implementation Plan – Removal of Sulfur
Storage and Handling Rules

Notice is hereby given that, pursuant to 40 CFR 51.102, the Department of Environmental Protection is accepting comments and will hold a public hearing on a proposed revision to Florida's State Implementation Plan (SIP). Attached please find the notice of public hearing and opportunity to submit comments that was published October 14, 2011, in the Florida Administrative Weekly. The public and affected states are invited to present comments on the proposed SIP revision at the hearing, but may also submit written comments no later than November 14, 2011, by letter or e-mail to Ms. Marnie Brynes, Department of Environmental Protection, Division of Air Resource Management, 2600 Blair Stone Road, Mail Station 5500, Tallahassee, Florida 32399-2400, or Marnie.Brynes@dep.state.fl.us.

The materials comprising the proposed SIP revision are posted at <http://www.dep.state.fl.us/air/rules/regulatory.htm>. Please assist any member of the public who may contact you asking to view these materials.

www.dep.state.fl.us

Notifications to Other States



Florida Department of Environmental Protection

Division of Air Resource Management
2600 Blair Stone Road, MS. 5500
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

Via Electronic E-mail

October 14, 2011

Mr. James A. Capp, Chief
Air Protection Branch
Georgia Department of Natural Resources
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Dear Mr. Capp:

Re: Notice of Proposed Revision to Florida's State Implementation Plan –
Removal of Sulfur Storage and Handling Rules

Notice is hereby given that, pursuant to 40 CFR 51.102, the Department of Environmental Protection is accepting comments and will hold a public hearing on a proposed revision to Florida's State Implementation Plan (SIP). Attached please find the notice of public hearing and opportunity to submit comments that was published October 14, 2011, in the Florida Administrative Weekly. The public and affected states are invited to present comments on the proposed SIP revision at the hearing, but may also submit written comments no later than November 14, 2011, by letter or e-mail to Ms. Marnie Brynes, Department of Environmental Protection, Division of Air Resource Management, 2600 Blair Stone Road, Mail Station 5500, Tallahassee, Florida 32399-2400, or Brynes.Marnie@dep.state.fl.us.

If you have any questions about this proposed SIP revision, please contact me at (850) 717-9089 or by e-mail at Chad.R.Stevens@dep.state.fl.us. Additional information may be found at <http://www.dep.state.fl.us/air/rules/regulatory.htm>.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad R. Stevens".

Chadwick R. Stevens, Administrator
Regulatory & Legislative Reform Program
Division of Air Resource Management

Attached: Notice published October 14, 2011, in the Florida Administrative Weekly

www.dep.state.fl.us



Florida Department of Environmental Protection

Division of Air Resource Management
2600 Blair Stone Road, MS. 5500
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

Via Electronic E-mail

October 14, 2011

Ms. Maya Rao, Chief
Air Division
Mississippi Department of Environmental Quality
Post Office Box 2261
Jackson, Mississippi 39225

Dear Ms. Rao:

Re: Notice of Proposed Revision to Florida's State Implementation Plan –
Removal of Sulfur Storage and Handling Rules

Notice is hereby given that, pursuant to 40 CFR 51.102, the Department of Environmental Protection is accepting comments and will hold a public hearing on a proposed revision to Florida's State Implementation Plan (SIP). Attached please find the notice of public hearing and opportunity to submit comments that was published October 14, 2011, in the Florida Administrative Weekly. The public and affected states are invited to present comments on the proposed SIP revision at the hearing, but may also submit written comments no later than November 14, 2011, by letter or e-mail to Ms. Marnie Brynes, Department of Environmental Protection, Division of Air Resource Management, 2600 Blair Stone Road, Mail Station 5500, Tallahassee, Florida 32399-2400, or Brynes.Marnie@dep.state.fl.us.

If you have any questions about this proposed SIP revision, please contact me at (850) 717-9089 or by e-mail at Chad.R.Stevens@dep.state.fl.us. Additional information may be found at <http://www.dep.state.fl.us/air/rules/regulatory.htm>.

Sincerely,

Chadwick R. Stevens, Administrator
Regulatory & Legislative Reform Program
Division of Air Resource Management

Attached: Notice published October 14, 2011, in the Florida Administrative Weekly

www.dep.state.fl.us



Florida Department of Environmental Protection

Division of Air Resource Management
2600 Blair Stone Road, MS. 5500
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

Via Electronic E-mail

October 14, 2011

Mr. Ronald Gore, Chief
Air Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130

Dear Mr. Gore:

Re: Notice of Proposed Revision to Florida's State Implementation Plan –
Removal of Sulfur Storage and Handling Rules

Notice is hereby given that, pursuant to 40 CFR 51.102, the Department of Environmental Protection is accepting comments and will hold a public hearing on a proposed revision to Florida's State Implementation Plan (SIP). Attached please find the notice of public hearing and opportunity to submit comments that was published October 14, 2011, in the Florida Administrative Weekly. The public and affected states are invited to present comments on the proposed SIP revision at the hearing, but may also submit written comments no later than November 14, 2011, by letter or e-mail to Ms. Marnie Brynes, Department of Environmental Protection, Division of Air Resource Management, 2600 Blair Stone Road, Mail Station 5500, Tallahassee, Florida 32399-2400, or Brynes.Marnie@dep.state.fl.us.

If you have any questions about this proposed SIP revision, please contact me at (850) 717-9089 or by e-mail at Chad.R.Stevens@dep.state.fl.us. Additional information may be found at <http://www.dep.state.fl.us/air/rules/regulatory.htm>.

Sincerely,

Chadwick R. Stevens, Administrator
Regulatory & Legislative Reform Program
Division of Air Resource Management

Attached: Notice published October 14, 2011, in the Florida Administrative Weekly

www.dep.state.fl.us

Public Comments on SIP Notice

From: DeGrove [bdegrove@comcast.net]
Sent: Monday, October 17, 2011 9:35 AM
To: Phillips, Cindy
Subject: Rule 62-212.600, F.A.C., Sulfur Storage and Handling Facilities; and Rule 62-296.411, F.A.C., Sulfur Storage and Handling Facilities.

Cindy,

I saw in the Oct 14 FAW that DEP is proposing to remove the above rules from the Florida SIP. The notice also notes that a separate action would be required to repeal the rules from the FAC. Could you please explain why DEP is taking this action and whether the department intends to repeal the rules from the FAC?

Thanks,

Bruce DeGrove
DeGrove Consulting and Training
508 River Plantation Road
Crawfordville, FL 32327
850-509-3548
bdegrove@comcast.net

DEP Response to Public Comments

Ms. Phillips phoned Mr. DeGrove on October 17, 2011, to let him know that the Department of Environmental Protection (department) was taking the action because the rules are no longer necessary and, yes, the intent was to later repeal these particular air rules from the FAC (Florida Administrative Code) along with a group of other Department rules.

Pre-Hearing Submittal to EPA

Pre-Hearing Submittal Letter



Florida Department of
Environmental Protection

Division of Air Resource Management
2600 Blair Stone Road, MS. 5500
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

October 14, 2011

Mr. R. Scott Davis, Chief
Air Planning Branch
U. S. Environmental Protection Agency (EPA) – Region 4
61 Forsyth Street SW
Atlanta, GA 30303-8960

Dear Mr. Davis:

Re: Pre-Hearing Submittal: Proposed Revision to Florida's State Implementation Plan –
Removal of Sulfur Storage and Handling Rules

Notice is hereby given that, pursuant to 40 C.F.R. 51.102, the Department of Environmental Protection (DEP) is accepting comments and will hold a public hearing, if requested, on a proposed revision to Florida's State Implementation Plan (SIP). Enclosed please find the notice of opportunity to submit comments or request a public hearing published October 14, 2011, in the Florida Administrative Weekly. The public hearing, if requested, will be held November 16, 2011.

The SIP revision consists of proposed amendments to Florida's rules to repeal sections 62-212.600 and 62-296.411, F.A.C. These regulations for sulfur storage and handling facilities are no longer necessary. At the time these regulations were written in 1985, there was concern that total suspended particulate matter levels in Florida would be negatively impacted by sulfur handling and storage to such an extent as to warrant additional facility-specific work practices and monitoring. This has turned out not to be the case. The particulate matter emissions from these facilities are negligible. The General Preconstruction Review Requirements and Prevention of Significant Deterioration (PSD) provisions of sections 62-212.300 and 62-212.400, F.A.C., respectively; and the General Pollutant Emission Limiting Standards of section 62-296.320, F.A.C., can be applied instead to adequately control these negligible particulate emissions. The rules proposed for repeal and removal from Florida's SIP are enclosed.

Your review and comments prior to the scheduled hearing date will be appreciated. If you have any questions about this proposed SIP revision, please contact me at (850) 717-9089 or by e-mail at Chad.R.Stevens@dep.state.fl.us.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Stevens".

Chadwick R. Stevens, Administrator
Regulatory & Legislative Reform Program
Division of Air Resource Management

Enclosures: Notice published October 14, 2011, in the Florida Administrative Weekly
Rules 62-212.600 and 62-296.411, F.A.C., proposed for repeal

Materials Enclosed with Pre-Hearing Submittal

See “Notice of Opportunity to Submit Comments or Participate in Public Hearing” and “Materials Proposed to be Removed from the SIP” sections of this submittal.

EPA Comments on Pre-Hearing Submittal



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

November 10, 2011

Mr. Lawrence A. George, Administrator
Office of Policy Analysis and Program Management
Division of Air Resource Management
2600 Blair Stone Road,
Tallahassee, Florida 32399-2400

Dear Mr. George:

Thank you for your October 14, 2011, submittal transmitting a prehearing package proposing revisions to the Florida State Implementation Plan (SIP). Specifically, the submittal proposes to remove Florida rules 62-212.600 and 62-296.411 – *Sulfur Storage and Handling Facilities* which address requirements for sulfur handling, storing and application of facility-specific work practices. This SIP submittal is the subject of a public comment period which began on October 14, 2011, with written comments due by the close of business on November 14, 2011. EPA has completed its review and offer comments below for your review and consideration.

Upon reviewing the proposed SIP revision, EPA requests further technical clarification and information related to the potential impact of attainment, maintenance and reasonable further progress in the State of Florida as a result of the proposed changes to repeal rules 62-212.600 and 62-296.411 per section 110(l) of the Clean Air Act (CAA). Pursuant to section 110(l) of the CAA revisions to or removal of provisions from a SIP requires a demonstration that the change will not impact the attainment and/or maintenance of any national ambient air quality standard (NAAQS). Therefore, EPA requests Florida provide a technical demonstration documenting how removal of the sulfur storage and handling provisions at 62-212.600 and 62-296.411 will not have an impact on continued attainment and/or maintenance of the NAAQS, and in particular for particulate matter and sulfur dioxide, in the State of Florida.

Furthermore, EPA recommends that the State clarify how existing rules at 62.212.300 – *General Preconstruction Review Requirements* and 62.212.400 - *Prevention of Significant Deterioration* will be applied to sulfur storage and handling facilities. Specifically, please explain how the sulfur storage and handling facilities will be regulated under these existing regulations and still provide adequate protection of human health, the environment and the NAAQS following repeal of rules 62-212.600 and 62.296.411.

We appreciate your transmittal of this package for our consideration. If you have any questions, please contact Ms. Lynorae Benjamin, Chief, Regulatory Development Section at (404) 562-9040, or have your staff contact Ms. Twunjala Bradley at (404) 562-9352.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Scott Davis".

R. Scott Davis
Chief
Air Planning Branch

DEP Response to EPA Comments

See the "Technical Support" portion of the "Response to 40 CFR Part 51, Appendix V, Criteria" section of this submittal.

12200 S. Carondelet Ave., Chicago, Illinois – Gulf Sulphur Services Ltd., LLLP
Request for Variations from Regulations
(Air Pollution Control Rules and Regulations for the Handling and Storage of Bulk Material Piles)

GSS EXHIBIT 9-B

US EPA Approval of Florida's Removal of Sulphur Specific Regulations

State citation	Title/subject	State effective date	EPA approval date	Additional explanation/ § 52.2063 citation
Title 65 Pennsylvania Statute—Public Officers Part II—Accountability Chapter 11—Ethics, Standards, and Financial Disclosure				
Section 1101	Short title of chapter	12/14/98	10/16/14 [Insert Federal Register citation].	Addresses CAA section 128.
Section 1102	Definitions	1/1/07	10/16/14 [Insert Federal Register citation].	Addresses CAA section 128.
Section 1104	Statement of financial interests required to be filed.	12/14/98	10/16/14 [Insert Federal Register citation].	Addresses CAA section 128.
Section 1105	Statement of financial interests.	1/1/07	10/16/14 [Insert Federal Register citation].	Addresses CAA section 128.
Section 1109	Penalties	12/14/98	10/16/14 [Insert Federal Register citation].	Addresses CAA section 128.

* * * * * (1) * * *
(e) * * *

Name of non-regulatory SIP revision	Applicable geographic area	State submittal date	EPA approval date	Additional explanation
Section 110(a)(2) Infrastructure Requirements for the 2008 Pb NAAQS.	Statewide	5/24/12	4/7/2014, 79 FR 19001	This rulemaking action addresses the following CAA elements: 110(a)(2)(A), (B), (C), (D)(i)(I), (D)(i)(II), (D)(ii), (E)(i), (E)(iii), (F), (G), (H), (J), (K), (L), and (M). This rulemaking action addresses the following CAA elements: 110(a)(2)(E)(ii).
		7/15/14	10/16/14 [Insert Federal Register citation].	

* * * * *
[FR Doc. 2014-24340 Filed 10-15-14; 8:45 am]
BILLING CODE 6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R04-OAR-2013-0746; FRL-9917-64-Region-4]

Approval and Promulgation of Implementation Plans; Florida: Removal of Sulfur Storage and Handling Rules

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is taking final action to approve a revision to the Florida State Implementation Plan (SIP), submitted by the Florida Department of Environmental Protection (FDEP), on April 5, 2012. The revision modifies Florida's SIP to remove two state rules relating to new and existing sulfur

storage and handling facilities because they are no longer necessary. EPA has determined that Florida's April 5, 2012, SIP revision regarding sulfur storage and handling facilities is approvable because it is consistent with the Clean Air Act (CAA or Act).

DATES: This rule will be effective November 17, 2014.

ADDRESSES: EPA has established a docket for this action under Docket Identification No. EPA-R04-OAR-2013-0746. All documents in the docket are listed on the www.regulations.gov Web site. Although listed in the index, some information is not publicly available, i.e., Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through www.regulations.gov or in hard copy at the Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S.

Environmental Protection Agency, Region 4, 61 Forsyth Street SW., Atlanta, Georgia 30303-8960. EPA requests that if at all possible, you contact the person listed in the **FOR FURTHER INFORMATION CONTACT** section to schedule your inspection. The Regional Office's official hours of business are Monday through Friday, 8:30 to 4:30 excluding federal holidays.

FOR FURTHER INFORMATION CONTACT: Sean Lakeman, Regulatory Development Section, Air Planning Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street SW., Atlanta, Georgia 30303-8960. The telephone number is (404) 562-9043. Mr. Lakeman can be reached via electronic mail at lakeman.sean@epa.gov.

SUPPLEMENTARY INFORMATION:

I. Background

The FDEP revision requests that EPA remove two state rules—Rule 62-212.600, Florida Administrative Code (F.A.C.), "Sulfur Storage and Handling Facilities" and Rule 62-296.411, F.A.C.,

“Sulfur Storage and Handling Facilities”—from Florida’s SIP. Florida repealed these rules on February 16, 2012.

The requirements of Rule 62–212.600, F.A.C., apply to proposed new or modified sulfur storage and handling facilities. The rule states that the owner or operator of any proposed new or modified sulfur storage and handling facility that is to be located within five kilometers of either a particulate matter (PM) air quality maintenance area or a prevention of significant deterioration (PSD) Class I area shall provide FDEP with an analysis of the probable particulate matter ambient air quality impacts that could result from the operation of the facility. Additionally, the owner or operator shall provide FDEP with an analysis of the probable annual and maximum monthly sulfur deposition rates that could occur as a result of the operation of the facility. The owner or operator shall conduct post-construction air quality and deposition monitoring of sulfur particulate emissions from the facility for two years from the date of issuance of the initial air operation permit for the facility, and, through the permitting process, shall determine the period of time, if any, such monitoring must be continued. The data collected would then be provided to FDEP as specified in the permit. Florida states that the “General Preconstruction Review Requirements” and “Prevention of Significant Deterioration (PSD)” provisions of the Rules 62–212.300 and 62–212.400, F.A.C., respectively, can be used instead of Rule 62–212.600, F.A.C., to prevent PM emissions that would interfere with attainment and maintenance of national ambient air quality standards (NAAQS), prevention of significant deterioration of air quality, or protection of visibility.

Rule 62–296.411, F.A.C., states that no person shall cause, suffer, or allow elemental sulfur to be stored, handled, or transported within the State in crushed bulk or slate form or in any form other than standard sulfur pellets or in molten form, except that sulfur may be transferred within the boundaries of a single facility in other forms. Facilities using standard sulfur pellets or molten sulfur, or sulfur vating facilities, may be permitted only in conformance with the practices identified in the rule. Florida states that the “General Pollutant Emission Limiting Standards” of Rule 62–296.320, F.A.C., can be applied instead of Rule 62–296.411, F.A.C., to adequately control PM emissions from dry material handling operations such

as those associated with sulfur storage and handling facilities.

With removal of the above two rules from the SIP, Florida’s PM requirements under the SIP for new and existing sulfur storage and handling facilities would align with the PM requirements for other, similar dry material handling sources in the State. At the time that Florida promulgated its sulfur storage and handling rules, the State was concerned that total suspended particulate matter levels in Florida would be negatively impacted by increased sulfur handling and storage operations to such an extent as to warrant additional facility-specific work practices and monitoring. However, the anticipated increase in sulfur handling and storage operations did not occur, and only 11 facilities are subject to Rule 62–212.300, F.A.C. and Rule 62–212.400, F.A.C. EPA approved these two rules into the SIP on December 24, 1985, at 50 FR 52460.¹

EPA’s primary consideration for determining the approvability of Florida’s request to remove the existing sulfur storage and handling facilities rules, 62–212.600, F.A.C. and 62–296.411, F.A.C., from the SIP is whether these requested actions comply with section 110(l) of the CAA. Under section 110(l), EPA cannot approve a SIP revision if that revision would interfere with any applicable requirement regarding attainment, reasonable further progress (RFP), or any other applicable requirement established in the CAA. EPA will approve a SIP revision that removes or modifies control measures in the SIP only after the state makes a “noninterference” demonstration that such a removal or modification will not interfere with RFP, attainment or maintenance of any NAAQS, or any other CAA requirement. As such, Florida was required to make a demonstration of noninterference in order to remove the sulfur storage and handling facilities requirements from its SIP.

Because actual emissions are not expected to change, there will be no impact on PSD increments, RFP, visibility, attainment or maintenance of any NAAQS, or any other applicable CAA requirement. Particulate matter, in the form of coarse (PM₁₀) and fine (PM_{2.5}) PM, is the pollutant related to

the SIP revision. On January 15, 2013 (78 FR 3086), EPA established an annual primary PM_{2.5} NAAQS at 12.0 micrograms per cubic meter (µg/m³) based on a 3-year average of annual mean PM_{2.5} concentrations. At that time, EPA retained the 2006 24-hour PM_{2.5} NAAQS at 35 µg/m³ based on a 3-year average of the 98th percentile of 24-hour concentrations. All areas in the State are currently designated as attainment for the PM₁₀ and PM_{2.5} NAAQS.

There are no emissions reductions of carbon monoxide (CO), lead, nitrogen oxides, ozone, or sulfur dioxide (SO₂) attributable to the sulfur storage and handling facilities requirements. As a result, the removal of these requirements will not interfere with attainment of these NAAQS.

Of the 11 facilities that are subject to the sulfur handling and storage emission rules, four will experience a relaxation in the opacity limit from 10 or 15 percent to 20 percent if 62–212.600, F.A.C. and 62–296.411, F.A.C. are removed from the SIP, but emissions are not expected to increase because the underlying work practices will remain unchanged. The sulfur particulate emitting emissions units at these four facilities are approximately less than one ton per year, and a majority of the visible emissions tests conducted in 2010–11 for sulfur storage and handling units showed no visible emissions (i.e., zero percent opacity).

Furthermore, several existing state rules incorporated into Florida’s SIP can be applied in lieu of Rules 62–212.600, F.A.C. and 62–296.411, F.A.C. to address sulfur PM emissions from sulfur storage and handling emissions units at these facilities. Rules 62–212.300 and 62–212.400, F.A.C., respectively, can be applied instead of the sulfur-specific requirements of paragraph 62–212.600(2)(a), F.A.C., to evaluate potential particulate matter ambient air quality impacts. The sulfur deposition analysis required by paragraph 62–212.600(2)(b), F.A.C., is unnecessary because there is no standard to compare the results with to demonstrate compliance. Rule 62–296.411, F.A.C., the “General Pollutant Emission Limiting Standards” of Rule 62–296.320, F.A.C., and, for some emissions units, the PM Reasonably Available Control Technology requirements of Rule 62–296.711, F.A.C., can be applied to control the sulfur PM emissions from sulfur storage and handling emissions units at these facilities. Rule 62–296.711, F.A.C. generally imposes a five percent opacity limit for existing sulfur handling, sizing, screening, crushing, and grinding operations in former total suspended particulate nonattainment

¹ EPA’s December 24, 1985, action incorporated the state sulfur storage and handling rules at 17–2.540, F.A.C. and 17–2.600, F.A.C. into Florida’s SIP. Florida later reorganized its administrative code and renumbered these rules as 62–212.600, F.A.C. and 62–296.411, F.A.C., respectively. EPA updated the Florida SIP on June 16, 1999 (64 FR 32346), to make it consistent with the revised numbering system.

areas or within 50 kilometers of such former areas except where an emissions unit has received a Best Available Retrofit Technology determination or the emissions are insignificant enough to be exempted under Rule 62–296.700(2), F.A.C. The control techniques and work practice standards found in Rule 62–296.411, F.A.C., to control unconfined emissions of particulate matter can also be required by paragraph 62–296.320(4)(c), F.A.C., which prohibits the emission of unconfined particulate matter without taking reasonable precautions to prevent such emissions.

For the reasons discussed above, EPA has determined that removal of the sulfur storage and handling facilities rules will not interfere with attainment or maintenance of the NAAQS in surrounding states or interfere with any other requirement identified in section 110(l). On July 1, 2014 (79 FR 37255), EPA proposed approval of the Florida April 5, 2012, submission. No adverse comments were received on this proposed action and EPA is hereby finalizing approval of the revision.

II. Final Action

EPA is taking final action to approve Florida's April 5, 2012, SIP revision to remove Rule 62–212.600, F. A. C. and Rule 62–296.411, F. A. C., related to sulfur storage and handling facilities, from the Florida SIP because the Agency has determined that this revision is consistent with section 110(l) of the CAA.

III. Statutory and Executive Order Reviews

Under the CAA, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve state choices, provided that they meet the criteria of the CAA. Accordingly, this action merely approves State law as meeting federal requirements and does not impose additional requirements beyond those imposed by State law. For that reason, this final action:

- Is not a "significant regulatory action" subject to review by the Office of Management and Budget under Executive Order 12866 (58 FR 51735, October 4, 1993);
- does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- is certified as not having a significant economic impact on a substantial number of small entities

under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);

- does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104–4);
- does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the CAA; and
- does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

The SIP is not approved to apply on any Indian reservation land or in any other area where EPA or an Indian tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), nor will it impose substantial direct costs on tribal governments or preempt tribal law.

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this action and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a "major rule" as defined by 5 U.S.C. 804(2).

Under section 307(b)(1) of the CAA, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by December 15, 2014. Filing a petition for reconsideration by the Administrator of this final rule does not

affect the finality of this action for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. *See* section 307(b)(2).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Particulate matter, Reporting and recordkeeping requirements and Sulfur oxides.

Dated: September 25, 2014.

Heather McTeer Toney,
Regional Administrator, Region 4.

40 CFR part 52 is amended as follows:

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

- 1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

Subpart K—Florida

- 2. Section 52.520(c) is amended by removing the entries for "62–212.600" under Chapter 62–212 Stationary Sources—Preconstruction Review and "62–296.411" under Chapter 62–296 Stationary Sources—Emission Standards.

[FR Doc. 2014–24005 Filed 10–15–14; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA–R05–OAR–2014–0242; FRL–9916–27–Region 5]

Approval and Promulgation of Air Quality Implementation Plans; Wisconsin; Approval of Revision to PSD Program

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is taking final action to approve a revision to the Wisconsin State Implementation Plan (SIP) submitted by the Wisconsin Department of Natural Resources (WDNR) to EPA on March 12, 2014, for parallel processing. On August 11, 2014, WDNR submitted an updated submittal with the final rules. The submittal modifies