



Rec# 7696

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From: Naeem Ahmed  
Sent: 28/12/2005 15:11  
To: [-] Leon Christopoulos; James McNicol  
Cc: [-] Jose Larocca; Jorge Troop; Farzad Askari; Amjad Habbas; Graham Sharp; Claude Dauphin  
Bcc: [-] Naeem Ahmed  
Subject: Re: Caustic Soda Treatments

Please find a brief overview of the caustic washing/procedures etc;

#### Terminals

I have approached all our storage terminals with the possibility of Caustic washing and only Vopak Fujairah and Tankmed La Skhirra our willing to entertain the idea, and currently perform this operation at FRCL (Fujairah) only. This operation is no longer allowed in EU / US and Singapore.

Caustic washes are banned by most countries due to the hazardous nature of the waste (mercaptans, phenols, smell) and suppliers of caustic are unwilling to dispose of the waste since there are not many facilities remaining in the market. There is a company in Rotterdam that burns such waste in a high stack chimney and charges are approx \$200/kg and could have upto 1000kgs of sludge after a treatment operation. Under EU law you no longer allowed to transport such waste across EU borders.

I have located a Caustic supplier in Estonia who is testing the waste before they are willing to commit to supply and disposal service. We have performed some handblends on K10 (1200ppm Mercaptans) and achieved 50pct drop in Mercaptans after 24 hrs. Alexela terminal are reluctant to allow us to perform this operation since they had a bad experience with Tintrade a few years ago who left the caustic solution and waste in the shoretank for 5-6 weeks which stripped the tank bottoms and lead to erosion of tank bottom and roof seals etc. Hopefully we will be able to convince Alexela to allow us to perform this operation providing we can stick to strict procedures for treatment and disposal of the waste.

Also am discussing with La Skhirra who may allow us to perform the operation and have located a supplier but just awaiting a decision whether they are willing to dispose of the waste, thereafter hope to receive a positive reply in the next few days.

#### Caustic Solution/Additives

Caustic Soda (high density) comes in varying concentration of Sodium Hydroxide (10pct, 15pct, 20pct, 25pct and 30pct), we have been typically using the 15pct concentrate and injecting as 0.1/0.2 pct of the total cargo to be treated and adding 0.2pct Catalyst (have direct contact with supplier in US) to further boost the reaction rate.

Caustic attacks Aluminium and other pure metals so normally tank roofs and tank bottoms are epoxy coated to prevent erosion/reaction against non-steel parts. After such an operation it is inherent that the caustic/waste is removed after 3/4 days max.

There are Mercaptan Scavenger additives on the market but these tend to remove

mercaptans by approx 40ppm max thereafter additive is saturated and no longer reacts, after reaction this leaves low concentrations of residue on tank bottoms (negligible so no removal necessary).

#### Example

At FRCL if we were to treat 20kt of Naphtha then we would add 20mts of Caustic Soda Solution with 40kgs of Catalyst in the shoreline during the discharge of the cargo. Ideally you need to circulate the tank for 24/48 hours thereafter Caustic solution would settle at the base of the tank and would be drained. To protect the tank you could further add 20mts of water to the shore tank in order to wash tank bottoms/lines, thereafter perform a water drain. Caustic is supplied by a road truck and is drained back to the truck for disposal.

#### PMI Product

The PMI product has 1500ppm Mercaptans, high Gums, H<sub>2</sub>S, Cu Corrosion and low Oxidation stability. We can treat the H<sub>2</sub>S and Gum with Additive Inhibitors, and add antioxidants to stabilise the product to avoid deterioration/stability/color of product. And in theory, after reduction of Mercaptans this would automatically correct the Cu corrosion. Samples have just arrived in Fujairah today and have instructed some analysis and will have some results by Friday.

I am continuing investigations and discussions with terminals in order to see how we can optimize and progress on caustic washing, and will revert on the analysis of the PMI high sulphur product.

Rgds

CC: Jorge Marrero (London); Jose Larocca  
Sent: Tue Dec 27 20:47:33 2005  
Subject: Re: More High Sulfur from PMI

Naeem,

How about treatment of the mercaptans followed by specialist disposal of the slurry ??

-----Original Message-----

From: Naeem Ahmed  
To: James McNicol; Leon Christophilopoulos; Jorge Troop; Farzad Askari; Amjad Habbas  
CC: Jorge Marrero (London); Jose Larocca  
Sent: Tue Dec 27 19:29:05 2005  
Subject: Re: More High Sulfur from PMI

We have already spoken to all the main storage companies, US / Singapore and European terminals no longer allow the use of caustic soda washes since local environmental agencies do not allow disposal of the toxic caustic after treatment.

Upto now only FRCIL have allowed us to use their tanks for Caustic treatment.

I have also found a supplier of Caustic in the baltics and trying to convince them to dispose of the waste and if so will then most likely receive the green light from Paldiski in the next 4-8 weeks.

I am almost there with La Skhirra and hope to receive a positive answer by the end of the week.

Rgds

-----Original Message-----

From: James McNicol  
To: Leon Christophilopoulos; Jorge Troop; Farzad Askari; Amjad Habbas  
CC: Naeem Ahmed; Jorge Marrero (London); Jose Larocca  
Sent: Tue Dec 27 19:11:39 2005  
Subject: Re: More High Sulfur from PMI

The cargo is available at usgc wb - 120cpg which with deemed pricing before summer cycles is bloody cheap (without deemed pricing it is still cheap).