

## CRUDE OIL QUALITY GROUP

### Chemical Component Survey Summary

<u>Chemical Compound</u>	<u>Probable Source:</u> <u>Naturally Occurring in Crude Oil</u>	<u>Problem</u> -	<u>Mitigation</u>
Arsenic	Naturally occurring in crude	Hazardous waste disposal Catalyst poison	
Chlorides*	Naturally found in the water during crude production	Corrosion Fouling in the crude unit Product specifications	
Filterable Solids	Most are naturally occurring in crude oil Also corrosion by-products from pipelines, tanks, process equipment, etc.	Desalter emulsion problems Fouling in the crude unit	In rare start up cases, solids from drilling mud can be found in the crude even though it is never supposed to be added.
Nickel, Vanadium	Naturally occurring in crude as organic species	Catalyst poison Product specifications Environmental excursions	
Other Heavy Metals**	Naturally occurring in crude but generally not as organic species  Also, Zinc is used in water treatment and Chromium in drilling mud	Catalyst poison Product specifications Environmental excursions	Drilling mud should never be added to crude oil
Iron	Naturally occurring in crude but generally not as an organic species. (Also from iron oxide and sulfide corrosion products)	Catalyst poison Fouling in the crude unit Product specifications	
Mercury	Naturally occurring in crude	Health concern Catalyst poison	
NORM Naturally occurring Radioactive material	Naturally occurring in crude oil	Health concern Hazardous waste disposal	
Organic Acids	Naturally occurring in crude oil Also - possible production additive	Environmental excursions Corrosion	Can be treated to neutralize
Selenium	Naturally occurring in crude	Health concern Environmental excursions	

\*Chlorides - Calcium Chloride, Magnesium Chloride

\*\* Other Heavy Metals - Copper, Cobalt, Chromium, Antimony, Zinc, etc.

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<b><u>Chemical Compound</u></b>	<b><u>Probable Source: Contamination</u></b>	<b><u>Problem</u></b> -	<b><u>Mitigation</u></b>
Organic Halides	Contamination from cleaning solvents, lab waste, etc.	Corrosion	Should never be "dumped" into crude
Spent Caustic	Refinery process	Environmental excursions Desalter emulsion problems Catalyst poison	
Zinc	Organic Zinc may be present as a result of disposal of motor oils.	Environmental excursions Desalter emulsion problems Catalyst poison	Eliminate disposal into crude streams

<b><u>Chemical Compound</u></b>	<b><u>Probable Source: Additives</u></b>	<b><u>Problem</u></b> -	<b><u>Mitigation</u></b>
Amines	Additive - neutralizer Crude oil also contains amines naturally	Environmental excursions Corrosion	
Calcium Stearate	Additive - flow improver	Fouling in the crude unit	
Ethylene Glycol	Additive - hydrate inhibitor	Environmental excursions Product specifications	
Filming Amines	Additive - corrosion inhibitor	Hazardous waste disposal Desalter emulsion problems Fouling in the crude unit	
Methanol	Additive - hydrate Inhibitor	Environmental excursions	Can be diverted if known
Mineral Acids	Additive - used to acidize wells to remove scales	Environmental excursions Corrosion	
Phosphates	Additive - gel pigging and gel acidizing	Fouling in the crude unit	
Polydimethylsiloxane	Additive - defoamer	Catalyst poison	
Surfactants	Additive - oil field production	Desalter emulsion problems	