

Monsanto

FROM (NAME & LOCATION)

S. Mickelson RUT
D. D. Mickelson - Krummrich

DATE

September 27, 1971

cc:

E. R. Billen

~~G. A. Wyppel~~

S. B. Lutkewitte

G. C. Hudson

J. F. Thompson - G.O.

D. L. Weber

SUBJECT

SOLUBLE GRADE KCl TEST

REFERENCE

TO

J. C. Hume

Two of the items needed to proceed with planning and implementation of another soluble (Ag-grade) KCl test are the quality of the KCl and the savings involved. These items are summarized at the end of this memo.

Since we are talking in terms of \$72,000+ per year in savings, it is imperative to proceed as rapidly as possible toward setting up a test. Further incentive has been provided by Sil Lutkewitte's discussions of September 17, 1971 with the people at Hooker in Niagara Falls, N.Y. He found out that they are using a mixture of soluble grade and chem grade KCl to feed their Udhe cells. This is the first specific confirmation of them running soluble grade for anything other than a test. They report hydrogen increases of less than 0.5% in their cells as a result of using this mix (ratios are unknown). Their stated goal is 100% soluble grade, but they haven't achieved it as yet.

Several questions need to be resolved before we can go full time to a soluble/chem KCl mix:

1. Effect of high Na^+ on KOH for TKPP. Per J. C. Weber and Carondelet plant we can go as high as 2000 ppm Na^+ before we get into trouble. They prefer 1000 ppm Na^+ .
2. Effect of high Na^+ on KOH for ACL-59. Above 3000 ppm Na^+ in the total process stream, crystal growth problems occur (slime, fines). A usage of KOH with 1000 ppm Na^+ would have to be tested, but is probably acceptable. Above this level, trouble may occur. (Note: Significant amounts of Na^+ are brought into the process as Na_3CYA feed stock.)
3. Effect of high Na^+ on KOH for IDV users (Nitro, Queeny). Will you get the input here?
4. ~~Effect of using soluble grade KCl on bromine levels.~~ Concern has always been high bromine. Per the specification sheets, on P.C.A. soluble KCl, there is no significant difference in bromine levels. ~~Will you determine what else is needed with soluble grade?~~

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5. Effect of high Na^+ on KOH for customer sales. This will have to be determined by Marketing. I will handle the contacts here.
6. Effect of soluble KCl on cell house (DSA, steel bottom) operations. Only a test will answer these questions. When can it be scheduled?



D. D. Mickelson

bp

Atts. (2)

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TABLE I
COST SAVINGS SUMMARY

(Per R. F. Neunuebel)

- A. KCl Purchases = 45,500 T/Year (1972 Budget)
- B. Chemical Grade KCl Price = \$30.00/T F.O.B. (1/1/72)
- Ag-Grade KCl* = 23.71/T F.O.B.
- Price Differential = \$ 6.29/T

*Weighted seasonal price differentials for 7/71 to 6/72 computes to \$23.47/ton F.O.B. for Ag-grade KCl. This is corrected by 99.95/98.94 ratio to put on same dry KCl basis as chem grade.

- C. PCA says they will ship KCl in a 2 compartment chemical grade/1 compartment soluble grade car (33% blend). Previous testing at W GK was 25% blend.

- D. Potential Savings/Year:

~~25%~~ Blend - 11,400 T x \$6.29/T = \$71,700/Yr.

~~33%~~ Blend - 15,300 T x \$6.29/T = \$96,200/Yr.

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TABLE II

KCl QUALITY SUMMARY

(per Potash Co. of America)

		<u>TYPICAL ANALYSIS</u>	
		<u>CHEM. GRADE</u>	<u>SOLUBLE GRADE</u>
<u>Chemical Composition (%)</u>			
*KCl, dry basis		99.95%	98.94%
K ₂ O		63.14%	62.50%
Moisture, H ₂ O		0.02%	0.03%
<u>Water Solubles (ppm)</u>			
*Sodium	Na	100 ± 50	4180 ± 3000
*Sulfate	SO ₄	10 ± 5	55 ± 35
*Bromide	Br	295 ± 30	240 ± 40
Calcium	Ca	4	8 ± 4
*Magnesium	Mg	2	125 ± 100
Iron	Fe	0	.05
Copper	Cu	.02	.10
*Lead	Pb	.03	5
Nickel	Ni	.02	.03
Chromium	Cr	.005	.008
Molybdenum	Mo	.006	.006
Vanadium	V	.002	.007
Fluoride	F	1	1
Arsenic	As	0	0
<u>Water Insolubles (ppm)</u>			
Total Inorganic		30	35
Silica	SiO ₂	10	15
Hydrogen Oxides	R ₂ O ₃	15	20
<u>Acid Insolubles (ppm)</u>		10	15

Sizing and bulk density are comparable for the chem and soluble grades of KCl.

*Areas of significant difference worth noting -- principally Na and Mg.

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