Coca Cola Project

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Our Challenge

-make 100,000 gallons of 85% Phosphoric acid and get it to coke

-If we get it to them without any problems they will pay us $3.29 per pound of phosphoric acid

-In addition we also have to get it there on time

Need to knows:

-How much phosphorus we need

-Amount of money gained (profit)

-Total cost

-How many railcars we need to transport the product

-How many cans of coke are made

-How long it’s going to take

How much it will cost

-we took the $3.29 lb (14.05 gallons/ 1 lb) (1,000,000 gallons)

-multiplied all that

- Total cost will be $46,224,500

How much it will cost

-It takes $2.05 to make one pound of Phosphorus

- to manufacture the product without any additional operating cost it will cost $28,802,500

How much we will be paid

-to find out how much we will be making we subtracted the total cost and subtract the amount it would cost to manufacture

-(46,224,500 -28,802,500)= $17,422,000

How much Phosphorus we need

Balancing the equation:

$1P_4 + 5O_2 = 2P_2O_5$

$1P_2O_5 + 3H_2O$

1,000,000gal. (14.05lb./1gal)

This gives us 3781124.52597 lbs. We then convert it to metric tons:

1715.089234999859 metric tons of phosphorous

Transportation

-to transport the phosphoric acid to coke we will be using railcars

-Each rail car can hold 50 metric tons of product

-so we took the 1,715,892,253 gallons of phosphorus and converted it to metric tons

-1,715,892,253g phosphorous (1mt/1,000,000)=1,715.892mt

-Divided by 50 gives us 34.301 railcars need. (We then round up to 35 because we can’t have .301 railcars)