American Chemical Corporation
Liquidation and Investment Analysis

Instructions: Your learning team's solution for this case is due **Wednesday, March 21st 2018**. Your group should upload one electronic copy of your Excel solution on Canvas. You must upload your solution ***before 9am***. You should submit a solution to ***all*** "Assignment Questions". "Discussion Questions" are designed to provoke thought and will be discussed in class but you do not need to address these in your assignment. Your solution should be formatted and set out so that it is easy to read, clearly show your working, the logic behind your answers, and any assumptions you made in the analysis.

Important: Bring a spare print out of your solution to class to refer to as we discuss the case in the lecture. As always, electronics will not be allowed in class.

You will be completing two analyses regarding the purchase of the Collinsville plant. You are being asked to make each decision at 31 December 1979[1]. In both scenarios the Collinsville plant will last through to the end of 1990 (11 years). Should Dixon continue in the sodium chlorate business after 1990 it will have to scrap the plant entirely and build a new one incorporating new technologies.

Assignment Questions

Question 1: Value the Collinsville plant as it stands with the unlaminated graphite electrodes.

Using the following information to make your valuation:

a. Extend management's projections contained in Exhibit 8 through 1990 under the following assumptions (project only the additional items you need for the FCF calculation):
   i. The plant reaches *effective* capacity of 38,000 tons in 1982. Revenue increases thereafter reflect only unit price increases of 8% annually.
   ii. Power costs rise at 12% per annum after 1984.
   iii. Annual capital expenditures will be $500,000 in 1980, 1981, and 1982. From 1983 through to 1989 annual capital expenditure will be $600,000. No additional CAPEX will occur in 1990 as the plant closing approaches. See the note below on PP&E for further information.
   iv. All capital expenditures are depreciated straight-line over 10 years. (I have corrected Exhibit 8 in the spreadsheet to reflect this. Use these corrected numbers). Depreciation of any capital equipment starts the year after it is purchased.
   v. The tax rate is 48% throughout.
   vi. With the above exceptions and the items they affect, after 1984 other items should be forecast to grow at the same rate as sales. In other words, these other items are expected to maintain the same ratio to sales from 1984 onwards.
b. Estimate free cash flows for each year 1980-1989.
c. Estimate the free cash flows in 1990. This will include the free cash flow from operating the plant in 1990 and the cash flow consequences of shutting down the plant at the end of the year. Assume

[1] Use the "1979 - Expected" items in Exhibits 6, 7 and 8 as the true final values for that year.

account receivables will be liquidated at 100% of its 1990 book value, inventory at 80% of its 1990 book value[2] and PP&E at 0%. Treat the tax consequences of book losses of the liquidation of all these assets in the same way we treat book losses of PP&E so that any book losses (i.e. the difference between liquidation value and book value) can be used to lower taxable income[3]. Assume that Dixon will have enough taxable income and capital gains from its other operations so that the tax benefits of the book losses on all assets can be used right away in 1990 at the 48% tax rate. Assume that accounts payable will be paid in full in 1990.

d. Estimate Dixon's opportunity cost of capital for acquiring the Collinsville plant? Assume management's target debt ratio (i.e. ND/(ND+E)) for the Collinsville plant is 15%. Use this ratio for your WACC calculation. Disregard the information on the second last paragraph about the proposed financing of the deal. For the cost of debt use 11.25% (we will discuss this number in class). Information on potential comparable firms is provided in Exhibits 1, 2 and 5. You should choose which firms to use and justify your choice.[4]

Without the electrode upgrade, do you recommend purchasing the Collinsville plant at the asking price of $12 million?

Question 2: Value the Collinsville plant with the updated laminated electrodes.

The electrode update will occur in December 31 1980. It will cost $2.25 million (i.e. this is additional Cap Ex paid at December 31 1980). This cost will be depreciated straight-line over 10 years. It is estimated that once installed, the upgrade will eliminate all graphite costs and will cut power costs by 17.5% (i.e. starting in 1981). These cost savings from the upgrade will last until the plant abandonment at the end of 1990. As with the rest of PP&E, assume that the upgrade has zero value in liquidation.

All other information about the plant remains the same as in Question 1.

Do you recommend that Dixon pays the $2.25 million to upgrade the Collinsville plant?

Do you recommend the purchase of the Collinsville plant for $12 million with the anticipated electrode update in 1980?

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[2] Inventory is being sold on 31 December 1990 at 80% of its 1990 book value (i.e. book value at December 30 1990 just prior to the sale). This discount is due to liquidation and is not because of a fall in the market value of the inventory. As a result the forecast value of Inventory should not be adjusted in 1990 or previous years in anticipation of this sale.

[3] See the material on "Asset Sales" in the Free Cash Flow lecture for more on this.

[4] Notes on Exhibits 1, 2 and 5: The capital structure information (i.e. Total Capitalization, % Debt, % Preferred Stock, % Common Stock) is in book values. You also have enough information in these exhibits to find the market value of equity at each firm. Assume the comparable firms have no non-operating assets. Common Stock High/Low refers to the highest/lowest price the stock obtained at some time over the course of the year. Close is the most recent stock price when markets closed on December 31 of that year.

Note on PP&E

Exhibit 6 shows expected PP&E at the end of 1979 for the Collinsville plant of 4,014. However when Dixon buys the plant these assets appear in Dixon's balance sheet (Exhibit 8) at 10.6M (plant "write up" as per footnote 1 in the case reading). This 10.6M is the amount that will be depreciated straight line over the next 10 years starting in 1980. Additional depreciation (i.e. over the 1,060) that appears in Exhibit 8 in the following years (e.g. 1,110 in 1981, 1,160 in 1982 etc) is due to the additional capital expenditure in each year.

Discussion Questions (No Submission Required)

1. Suppose Dixon can borrow to finance the entire asking price of $12 million at 11.25%, would it make sense to use this number as the cost of capital for the acquisition? Explain.

2. What if American Chemical's laminate research doesn't pan out? What do you think is the problem with a deal that requires full payment initially? How could the deal be structured?

3. How should your valuation capture the risk of the laminate research not being successful?