

July 30, 1951

MEMORANDUM

TO: BOARD OF DIRECTORS

This special meeting has been called for the purpose of asking your approval of the acquisition of all the outstanding capital stock of the Kolker Chemical Works, Inc., in exchange for 33,500 shares of Diamond stock and your recommending the same to our stockholders for their approval. On July 18, 1951, an option agreement was signed with Leon A. Kolker, sole owner of Kolker Chemical Works, Inc., which gives us an opportunity to examine all of the company's books, records, and properties, and gives us the right to exercise such option not later than September 1, 1951, and to acquire all the Kolker stock not later than October 1, 1951.

Description of Products

Kolker's product line includes pesticides and herbicides. The former includes the familiar DDT and benzene hexachloride. In the latter line they produce 2,4D, which is a broad-leaf weed killer, and 2,4,5T, which is a brush killer of potentially great use in clearing mesquite waste lands of the southwest.

History

In 1945, Kolker, trading as the Kolker Chemical Works, established a small plant for the manufacture of DDT at Newark, New Jersey. This initial plant cost approximately \$85,000. Since that time the business has expanded rapidly and on February 1, 1948, it was incorporated. Substantial additions have been made to the Newark plant during the intervening years, and in 1950 a plant was constructed at Houston, Texas, on land purchased from Diamond. This plant is now in successful operation and the book value of the two plants (before depreciation) aggregates over \$1,500,000. (Schedule A shows the growth of fixed assets by years).

Plants

The Newark plant comprises older buildings of substantial construction once owned by American Agricultural Chemical Company. The Houston plant is of new construction, having been built by Brown & Root since early 1950. Equipment at both plants is fairly modern but general housekeeping and dust control are not up to Diamond standards and will require some improvement.

Insurance - Products Liability, etc.

Kolker carries what appears to be adequate insurance in boiler, fire and fidelity coverages. The fire insurance is expensive, reflecting the inflammable raw materials and products. Public liability insurance is particularly important, due to the possible bodily injury hazard from the product either by direct inhalation or contamination of food or water.

There are potentially property damage claims from damage to crops, etc. Kolker presently carries \$500,000 personal injury and \$100,000 property damage insurance which is considered inadequate. Both coverages should be increased to at least \$1,000,000 which we believe can be done reasonably with Diamond's leverage. Workmen's Compensation coverage is adequate and present high rates can be reduced by improvement in housekeeping and dust conditions.

Patents

(Under review. A full report will be available for the Board meeting.)

Raw Materials

Principal raw materials are Chlorine, Phenol, Benzol, Sulphuric Acid, Alcohol and Acetaldehyde. No procurement problem is seen here except as to phenol and benzol. Diamond's purchasing leverage may solve the problem as to the former, and we have benzol available from the Painesville coke ovens. Sulphuric acid is tight, but the EPA appears to be willing to assure necessary supplies to insecticide manufacturers.

Personnel

Personnel skilled in organic synthesis of the general type here involved will be acquired with the company, particularly Mr. Kolker who has demonstrated amazing ingenuity and capability in the development of this business.

We plan to continue the operations of Kolker as a subsidiary, continuing Mr. Kolker in charge.

Sales & Earnings

Kolker sales volume has grown rapidly during the last five years, reaching the following:

|                   | 2/1/51 - 5/31/51<br><u>Actual</u> | <u>Annualized</u> |
|-------------------|-----------------------------------|-------------------|
| Sales             | \$ 2,256,303                      | \$ 6,769,000      |
| Profit before FIT | 566,696                           | 1,700,000         |
| Net after 62% FIT | 211,696                           | 646,000           |

Sales and earnings during these months were restricted due to shortage of chlorine, and did not give full effect to the new Houston plant. June and July sales indicate the following as probable:

|                   |             |
|-------------------|-------------|
| Sales             | \$8,000,000 |
| Profit before FIT | 2,000,000   |
| Net after 62% FIT | 760,000     |

Distribution by Kolker has been affected largely by bulk sales to distributors, compounders and other chemical companies with little or no direct or brand-name selling.

Future Prospects

Future sales prospects are believed good, due to the need for higher agricultural efficiency. We have a report from A. D. Little, Inc., on "Trends in the Economic Poisons Industry" which is appended as Schedule F.

Kolker has plans for immediate expansion involving:

High Quality Benzene Hexachloride

The Kolker assets include the U. S. rights to a German process for the manufacture of 99.5% purity Benzene Hexachloride. Most commercial production at present is less than 50% purity although Hooker Electrochemical makes a 99% product which commands a premium price.

This plant will require an estimated investment of \$600,000 on which an estimated 50% after 62% F.I.T. would be earned, taking the selling price of the BHC at only \$2.00 per pound as compared with the current \$4.55 price of Hooker's material. Schedule E details this project.

Miticide

Although this is ostensibly covered by Dow patents, Kolker believes the patents not valid. If so, it would be a desirable addition to the line, and would require an investment of only about \$75,000.

Financial Data

Schedule B shows comparative balance sheet at various dates. This balance sheet indicates a net worth as of May 31 of \$930,000. The Kolker books are being checked by Price, Waterhouse in our behalf, and their report will shortly be available. Their examination to date indicates that net worth is probably understated. The Bureau of Internal Revenue has cleared tax returns through 1949.

Cash Requirements

There are a number of liabilities that should be liquidated, but it is believed that sufficient cash will be generated by earnings plus depreciation over the balance of the year for this purpose.

Capital requirements for new products and plant improvement are expected to total in the range of \$500,000 - \$800,000 over the remainder of the year.

Price to be Paid

Taking Diamond stock at the current approximate market value of \$65 per share, the total payment is \$2,177,500, which is

- 2.34 times Kolker's net worth at 5/31/51
- 1.28 times Kolker's 2/1/51 - 5/31/51 earnings annualized (before F.I.T.)
- 3.37 times Kolker's 2/1/51 - 5/31/51 earnings annualized (after 62% F.I.T.)

Kolker's earnings (annualized on basis of 2/1/51 - 5/31/51 actual) in terms of the number of Diamond shares paid represents

\$50.80 earnings per share before F.I.T.

19.30 earnings per share after 62% F.I.T.

as compared with Diamond's earnings for the first six months, annualized, of

\$17.95 earnings per share before F.I.T.

6.46 earnings per share after F.I.T.

Based on earnings annualized as above, the following summarizes the effect of this acquisition:

|                           | <u>Before</u> | <u>After</u> |
|---------------------------|---------------|--------------|
| Number shares outstanding | 1,086,854     | 1,120,354    |
| Earnings before F.I.T.    | \$17.94       | \$18.92      |
| Earnings after 62% F.I.T. | 6.86          | 7.23         |

#### Conclusion

It is our belief that the acquisition of Kolker is desirable for the following reasons:

- 1) The current profits, without consideration of other factors, more than justify the purchase price.
- 2) Diamond will acquire a more complete line of products for sale in both domestic and export markets.
- 3) Our program of diversification, both geographic and product-wise, will be furthered.
- 4) We will acquire a captive market for chlorine which permits substantial and attractive upgrading.
- 5) We will acquire a line that will improve our investment/sales and investment/earnings ratios.
- 6) We will acquire personnel of demonstrated ability in the organic field.

JOHN A. SARGENT

KOLKER CHEMICAL WORKS  
DETAIL OF FIXED ASSETS

Schedule A

|   | KOLKER CHEMICAL WORKS |                  |                  |                  |                  |                  |                  | L. & A. KOLKER<br>T/A KOLKER CHEMICAL WORKS |                 |
|---|-----------------------|------------------|------------------|------------------|------------------|------------------|------------------|---|-----------------|
|   | At 5/31/51            |                  | At 1/31/51       |                  | At 1/31/50       | At 1/31/49       | At 1/31/48       | 12/31/45                                    | 12/31/45        |
|   | Texas                 | New Jersey       | Texas            | New Jersey       | All              | All              | All              | All   | All             |
| <u>At Cost</u>                            |                       |                  |                  |                  |                  |                  |                  |   |                 |
| Land                                      | \$ 40,197             | \$ 10,000        | \$ 40,197        | \$ 10,000        | -                | -                | -                | -   | \$ 30,712       |
| Buildings & Improvements                  | 22,532                | 125,319          | 22,532           | 121,000          | -                | -                | -                | -   | 66,264          |
| Machinery, Equipment & Other              | 815,342               | 517,840          | 539,935          | 498,613          | \$ 391,408       | \$ 303,707       | \$ 168,379       | \$ 70,551                                   | 0,750           |
| Furniture & Fixtures, Automobiles & Books | 1,863                 | 16,065           | 1,501            | 25,148           | 10,257           | 8,319            | 4,935            | 109,145                                     | 1,775           |
| <b>TOTAL</b>                              | <b>\$879,934</b>      | <b>\$669,224</b> | <b>\$590,165</b> | <b>\$645,569</b> | <b>\$401,665</b> | <b>\$312,026</b> | <b>\$173,314</b> | <b>\$183,746</b>                            | <b>\$05,509</b> |
| <u>Reserve for Depreciation</u>           |                       |                  |                  |                  |                  |                  |                  |   |                 |
| Buildings & Improvements                  | \$ 563                | \$ 14,914        | \$ 330           | \$ 13,683        | -                | -                | -                | \$ 3,704                                    | \$ 212          |
| Machinery, Equipment & Other              | 43,323                | 131,948          | 24,946           | 115,279          | \$ 70,657        | \$ 39,662        | \$ 17,377        | 6,134                                       | 328             |
| Furniture & Fixtures, Automobiles & Books | 172                   | 4,571            | 92               | 2,683            | 3,399            | 2,348            | 1,692            | 719   | 244             |
| <b>TOTAL</b>                              | <b>\$ 44,058</b>      | <b>\$151,433</b> | <b>\$ 25,376</b> | <b>\$132,645</b> | <b>\$ 74,056</b> | <b>\$ 42,010</b> | <b>\$ 19,069</b> | <b>\$ 8,637</b>                             | <b>\$ 784</b>   |
| <u>Net Value</u>                          |                       |                  |                  |                  |                  |                  |                  |   |                 |
| Land                                      | \$ 40,197             | \$ 10,000        | \$ 40,197        | \$ 10,000        | -                | -                | -                | -   | \$ 30,712       |
| Buildings & Improvements                  | 21,969                | 110,405          | 22,194           | 107,317          | -                | -                | -                | -   | 66,052          |
| Machinery, Equipment & Other              | 772,019               | 385,892          | 508,989          | 383,334          | \$ 320,751       | \$ 264,045       | \$ 151,002       | \$ 68,767                                   | 0,430           |
| Furniture, Fixtures, Automobiles & Books  | 1,691                 | 11,494           | 1,409            | 11,465           | 6,858            | 5,971            | 3,243            | 103,011                                     | 1,345           |
| <b>TOTAL</b>                              | <b>\$835,876</b>      | <b>\$517,791</b> | <b>\$572,789</b> | <b>\$522,924</b> | <b>\$327,609</b> | <b>\$270,016</b> | <b>\$154,245</b> | <b>\$175,109</b>                            | <b>\$04,725</b> |

**Kolker Chemical Works  
Comparative Balance Sheet  
At Various Dates**

Schedule #

| Assets                                     | Kolker Chemical Works, Inc. |                     |                   |                   |                   | Leon A. Kolker<br>T/A Kolker Chemical Works |                  |
|--|-----------------------------|---------------------|-------------------|-------------------|-------------------|---|------------------|
|  | 5/31/1951                   | 1/31/1951           | 1/31/1950         | 1/31/1949         | 1/31/1948         | 12/31/1946                                  | 12/31/1945       |
| <b>Current Assets:</b>                     |                             |                     |                   |                   |                   |   |                  |
| Cash in Banks & on Hand                    | \$ 249,997                  | \$ 161,962          | \$ 15,143         | \$ 6,530          | \$ 69,238         | \$ 3,108                                    | \$ 4,565         |
| Accounts Receivable, incl. notes           | 407,918                     | 132,395             | 70,946            | 36,183 (1)        | 50,442            | 17,726                                      | 1,191 (2)        |
| Merchandise Inventory                      | 642,908                     | 572,075             | 159,150           | 80,106            | 71,722            | 40,505                                      | 7,900            |
| Due from Kolker Realty Co.                 | -                           | -                   | 8,547             | 387               | 16,481            | -   | -                |
| <b>Total</b>                               | <u>1,300,903</u>            | <u>867,232</u>      | <u>253,876</u>    | <u>123,206</u>    | <u>215,883</u>    | <u>61,339</u>                               | <u>13,736</u>    |
| <b>Land Plant and Equipment (3)</b>        |                             |                     |                   |                   |                   |   |                  |
| At Cost                                    | 1,549,158                   | 1,243,733           | 401,665           | 312,026           | 173,314           | 103,746                                     | 85,509           |
| Reserve for Depreciation                   | 195,491                     | 150,020             | 74,056            | 42,010            | 19,069            | 8,637                                       | 784              |
| <b>Net Value</b>                           | <u>1,353,667</u>            | <u>1,093,713</u>    | <u>327,609</u>    | <u>270,016</u>    | <u>154,245</u>    | <u>175,109</u>                              | <u>84,725</u>    |
| <b>Deferred Charges &amp; Other Assets</b> |                             |                     |                   |                   |                   |   |                  |
| Unexpired Insurance                        | 67,693                      | 22,429              | 18,506            | 4,038             | 5,300             | 8,056                                       | 987              |
| Other                                      | 12,046                      | 6,152               | 1,336             | 938               | 703               | 1,396                                       | 300              |
| <b>Total</b>                               | <u>79,739</u>               | <u>28,581</u>       | <u>19,842</u>     | <u>4,976</u>      | <u>6,003</u>      | <u>9,452</u>                                | <u>1,287</u>     |
| <b>Total Assets</b>                        | <u>\$ 2,734,309</u>         | <u>\$ 1,981,526</u> | <u>\$ 601,277</u> | <u>\$ 398,198</u> | <u>\$ 376,211</u> | <u>\$ 245,900</u>                           | <u>\$ 99,748</u> |
| <b>Liabilities</b>                         |                             |                     |                   |                   |                   |   |                  |
| <b>Current Liabilities:</b>                |                             |                     |                   |                   |                   |   |                  |
| Accounts Payable                           | \$ 502,667                  | \$ 594,444          | \$ 109,277        | \$ 108,651        | \$ 105,585        | \$ 52,980                                   | \$ 6,308         |
| Checkbook Overdraft                        | -                           | -                   | -                 | 10,309            | -                 | -   | -                |
| Federal Income Taxes                       | 755,000                     | 410,000             | 56,557            | 835               | 84,030            | -   | -                |
| Mortgage Payable                           | -                           | 4,500               | -                 | -                 | -                 | -   | -                |
| Notes Payable - Secured                    | 40,982                      | 107,949             | 9,316             | -                 | 2,889             | -   | -                |
| - Unsecured                                | 215,000                     | 37,556              | 58,950            | -                 | -                 | -   | -                |
| Customers Advance Payment on Contract      | 135,000                     | -                   | -                 | -                 | -                 | (48,628)                                    | -                |
| Accrued Wages, Bonus, P/A Taxes & Expenses | 36,458                      | 16,150              | 11,532            | 9,005             | 8,712             | 11,071                                      | 732              |
| <b>Total</b>                               | <u>1,685,107</u>            | <u>1,170,599</u>    | <u>245,632</u>    | <u>128,000</u>    | <u>201,216</u>    | <u>112,679</u>                              | <u>7,060</u>     |
| <b>Other Liabilities:</b>                  |                             |                     |                   |                   |                   |   |                  |
| Due members of the Kolker family           | 83,000                      | 45,000              | 40,000            | 92,147            | 852               | -   | -                |
| Mortgage Payable                           | -                           | 20,250              | -                 | -                 | -                 | -   | -                |
| Notes Payable - Unsecured                  | 9,500                       | 23,378              | 8,205             | -                 | -                 | 42,750                                      | 30,000           |
| Secured                                    | 26,310                      | -                   | 6,002             | -                 | -                 | -   | -                |
| <b>Total</b>                               | <u>118,810</u>              | <u>68,628</u>       | <u>54,207</u>     | <u>92,147</u>     | <u>852</u>        | <u>42,750</u>                               | <u>30,000</u>    |
| <b>Capital</b>                             |                             |                     |                   |                   |                   |   |                  |
| Common Stock, No Par Value                 | 100,000                     | 100,000             | 60,000            | 25,000            | 25,000            | -   | -                |
| Surplus                                    | 830,392                     | 622,299             | 241,438           | 152,351           | 149,143           | 90,471                                      | 62,708           |
| <b>Total</b>                               | <u>930,392</u>              | <u>722,299</u>      | <u>301,438</u>    | <u>177,351</u>    | <u>174,143</u>    | <u>90,471</u>                               | <u>62,708</u>    |
| <b>Total Liabilities and Capital</b>       | <u>\$ 2,734,309</u>         | <u>\$ 1,981,526</u> | <u>\$ 601,277</u> | <u>\$ 398,198</u> | <u>\$ 376,211</u> | <u>\$ 245,900</u>                           | <u>\$ 99,748</u> |

- (1) After deducting notes payable of \$44,000 on assigned Accounts Receivable.  
(2) Includes \$1,116 due from Creditors.  
(3) See Schedule A for detail.

**KOLKER CHEMICAL WORKS  
PROFIT AND LOSS STATEMENT  
VARIOUS PERIODS**

Schedule C

|  | KOLKER CHEMICAL WORKS, INC.                 |            |            |                       |            |
|--|---|------------|------------|-----------------------|------------|
|  | Four Months<br>Ending 5/31/51<br>Annualized | 1/31/51    | 1/31/50    | Year Ended<br>1/31/49 | 1/31/48    |
| Sales Net  | 86,769,000                                  | 83,576,030 | 81,529,504 | 8978,304              | 8953,718   |
| Cost of Sales  | 4,764,000                                   | 2,504,929  | 1,263,224  | 937,027               | 744,504    |
| Gross Profit   | 2,005,000                                   | 991,109    | 266,280    | 46,277                | 209,214    |
| Less Operating Expenses:                             |   |            |            |                       |            |
| Executive Salaries (office)                          | 68,000                                      | 34,366     | 28,316     | 23,400                | 23,400     |
| Freight Out  | 72,000                                      | 40,811     | 32,056     | 4,471                 | 5,691      |
| Auto & Travel Expense                                | 57,000                                      | -          | -          | -                     | -          |
| Business Promotion                                   | -   | 30,413     | 9,527      | 4,067                 | 4,701      |
| Other  | 88,000                                      | 75,187     | 33,020     | 21,311                | 21,566     |
| Total  | 285,000                                     | 100,777    | 103,719    | 53,249                | 55,358     |
| Operating Profit                                     | 1,720,000                                   | 810,332    | 162,561    | (6,972)               | 153,856    |
| Other Income   | 1,000                                       | 1,766      | 5,337      | 11,537                | 79,001 (1) |
| Other Deductions:                                    |   |            |            |                       |            |
| Loss on Disposal of Assets                           | -   | -          | -          | -                     | -          |
| Interest   | 19,000                                      | 22,779     | 16,353     | -                     | -          |
| Officers Life Insurance Premiums                     | 2,000                                       | 4,529      | 2,627      | 622                   | 484        |
| Total  | 21,000                                      | 27,308     | 18,980     | 622                   | 484        |
| Profit before Federal Income & Excess<br>Profits Tax | 1,700,000                                   | 784,790    | 145,743    | 3,943                 | 233,173    |
| Provision for Federal Income & Excess<br>Profits Tax | 1,056,000                                   | 410,000    | 56,556     | 835                   | 86,030     |
| Net Profit   | \$ 644,000                                  | \$ 374,790 | \$ 89,187  | \$ 3,108              | \$ 147,143 |

- (1) Includes Profit of \$78,158 on Sale of Machinery.  
 (2) Includes Rent Income of \$5,000  
 (3) Probably does not include Remuneration of Owner.

| LEON A. KOLKER<br>T/A KOLKER CHEMICAL WORKS |                                 |
|---|---------------------------------|
| Year Ended<br>12/31/46                      | Nine<br>Months Ended<br>1/31/45 |
| \$307,096                                   | \$178,964                       |
| 284,442                                     | 173,751                         |
| 17,654                                      | 5,213                           |
| 6,900 (3)                                   | 4,500 (3)                       |
| 2,734                                       | 2,991                           |
| -   | -                               |
| 201   | 447                             |
| 13,678                                      | 5,550                           |
| 23,513                                      | 13,498                          |
| (5,859)                                     | (8,285)                         |
| 5,223 (2)                                   | 2,494                           |
| 725   | -                               |
| 2,721                                       | -                               |
| -   | -                               |
| \$ (4,082)                                  | \$ (5,797)                      |

KOLKER CHEMICAL WORKS, INC.  
ACTUAL SALES

Figures in Pounds

| <u>1950</u> | <u>D.D.T.</u> | <u>2,4-D</u> | <u>B.H.C.</u> |             |
|-------------|---------------|--------------|---------------|-------------|
| January     | 210,000       | 00           |               |             |
| February    | 210,000       | 39,000       |               |             |
| March       | 265,000       | 195,000      |               |             |
| April       | 210,000       | 165,000      |               |             |
| May         | 310,000       | 128,000      |               |             |
| June        | 305,000       | 125,000      |               |             |
| July        | 303,000       | 32,000       |               |             |
| August      | 370,000       | 28,000       |               |             |
| September   | 305,000       | 35,000       |               |             |
| October     | 405,000       | 385,000      | 27,000        | (36%)       |
| November    | 385,000       | 361,000      | 273,000       | (12% basis) |
| December    | 341,000       | 332,000      | 138,000       | (36%)       |
|             | 3,619,000     | 1,825,000    |               |             |

January 1951 - June 1951 incl.

|          | <u>D.D.T.</u> | <u>2,4-D (1)</u> | <u>B.H.C.</u> |
|----------|---------------|------------------|---------------|
| January  | 340,000       | 370,000          | 171,500       |
| February | 365,000       | 371,000          | 118,000       |
| March    | 407,000       | 225,000          | 149,000       |
| April    | 384,400       | 124,000          | 144,625       |
| May      | 501,094       | 301,000          | 128,750       |
| June     | 671,730       | 310,825          | 125,625       |
|          | 2,669,224     | 1,701,825        | 837,500       |

(1) As Technical Ester (80% Acid).

Dollar Sales by Products

|                          | <u>4 Months<br/>Ended<br/>5/31/51</u> | <u>Fiscal Year<br/>Ended<br/>1/31/51</u> | <u>Fiscal Year<br/>Ended<br/>1/31/50</u> |
|--------------------------|---------------------------------------|--|--|
| DDT                      | \$ 727,215                            | \$1,188,939                              | \$ 604,693                               |
| Butyl Ester - 2,4-D      | 360,342                               | 978,364                                  | 374,506                                  |
| Isopropyl Ester of 2,4-D | 90,348                                | 178,842                                  | 149,975                                  |
| Amine of 2,4-D           | 200,148                               | 265,503                                  | 9,282                                    |
| Benzene Hexachloride     | 334,727                               | 253,567                                  | —  |
| 2,4,5-T Ester            | 68,922                                | 163,402                                  | 278,997                                  |
| Other Chemicals          | 495,108                               | 558,471                                  | 80,343                                   |
|                          | <u>\$2,256,810</u>                    | <u>\$3,587,068</u>                       | <u>\$1,497,796</u>                       |



99.5% Benzene Hexachloride (Lindane)

With the exception of Ecker Electrochemical's production of 99% pure material, the benzene hexachloride currently being produced and used is in the range of from 15 to 35% purity.

Aside from the obvious packaging and freight advantages of higher purity material, the higher quality is free of objectionable odor and is generally a superior product. In addition, there is much evidence that the impurities in the poorer grade material tend to "poison" the soil on which it is used over a period of years.

All of these factors together indicate that the ultimate market will be for the high quality material, and we believe that a definite competitive advantage will result from early entry into the high quality field.

The attached income and return statement has been prepared on the basis of information furnished by Lee Koller. The by-product credit shown is based upon a conservative recovery of trichlorobenzene for which a ready market exists, although future studies may indicate that a higher by-product credit could be achieved by further processing to 1,2,4,5 tetrachlorobenzene from which 2,4,5 trichlorophenol could be made, as the latter would be a captive raw material for 2,4,5-T.

The facilities proposed for lindane will be independent of the equipment now used to produce low-grade hexachlorobenzene, thus permitting simultaneous production to the extent necessary.

Income & Return  
 99.9% Benzene Hexachloride  
 Koller Chemical Works  
 Houston, Texas

|   |              |
|---|--------------|
| 1. Production, lbs. per day   | 4,000        |
| 2. Production, lbs. per year  | 1,460,000    |
| 3. Sales - 1,460,000 lbs. @ \$2.00/lb.  | \$ 2,920,000 |
| 4. Less A.S. & G. 5%  | 116,000      |
| 5. Annual Sales Income after A.S. & G.  | \$ 2,774,000 |
| 6. Annual Production Cost   |              |
| Raw Material - 75¢/lb.  |              |
| Labor & OH - 30¢/lb.  |              |
| <u>1.05¢/lb. X 1,460,000 lb. = \$1,533,000</u>  |              |
| Byproduct recovery 2¢ Trichlorobenzene @ 10¢/lb.<br>less 5¢/lb. recovery cost = \$0.05 X 1,460,000 = (73,000) | \$ 1,460,000 |
| 7. Net Income before D.T. & I.  | \$ 1,314,000 |
| 8. D.T. & I. @ 8% on 600,000  | \$ 48,000    |
| 9. Net Income before Taxes  | \$ 1,266,000 |
| 10. F.I.T. @ 62%  | \$ 984,920   |
| 11. Net-income after taxes  | \$ 281,080   |
| 12. Added Investment  | \$ 600,000   |
| 13. Percent Return  | 46.8%        |

MEMORANDUM

From: Arthur D. Little, Inc.

Case No.: P-3993

DATE: July 24, 1951

To: Diamond Alkali Company

Subject: Trends in the Economic Poisons Industry

Introduction

This memorandum includes a brief summary of the development of the economic poisons industry to date, together with projections of the immediate and longer-term outlook for the industry. In addition, a preliminary analysis has been made of the Kolker Chemical Works, Inc. status in the industry in terms of its attractiveness to Diamond Alkali as a means of participating in the economic poisons industry. The information in this memorandum is based upon published data and comments of selected industry representatives and government agencies.

Post-War Growth of Industry

Although the economic poisons industry is subject to a high degree of variation due primarily to seasonal variations and degrees of infestation, it has experienced a steady growth in the post-war period. During this same period there has also been a parallel increase in crop losses; for example, damage due to grasshoppers in 1949 amounted to over \$30 million as compared to the 1945 estimate of \$12.7 million. Losses due to the corn borer increased from \$36.7 million in 1945 to \$350 million in 1950. (Based on market prices). The boll weevil caused cotton losses to rise from \$170 million in 1945 to \$470 million by 1950, and recent appearances of the "green bug" in wheat caused a loss estimated at \$400 million in the first half of 1950. In total, the annual agricultural loss to insects is currently estimated at \$4.5 billion.

In addition to infestation, other factors which have expanded the use of economic poisons are (1) increased world and domestic food demands requiring maximum agricultural efficiency; (2) increased farm labor costs which make chemical weedeers more economical; (3) higher quality requirements in crops to meet public demand and (4) increased availability with corresponding price drops which have made pesticides more attractive to the cost-conscious farmer.

Of particular interest here are the four products manufactured by Kolker, namely, DDT, HEC, 2,4-D and 2,4,5-T. DDT production rose from just under 10 million pounds in 1944 to almost 50 million pounds in 1947. By 1948 over-estimates of the potential market coupled with a late growing season, which eliminated early sprayings, caused inventory accumulations to such an extent that production fell off to 20,000,000 pounds and prices reached a low of about 29¢ per pound. With a record weevil infestation in the South in 1949, however, production recovered to 38,000,000 pounds and a new high in infestation raised output to a record 63,000,000 pounds in 1950. Current capacity is estimated to be in the order of 100,000,000 pounds. Producers of DDT are duPont, General Chemical, Hooker, Monsanto, Penn Salt, and Westvaco.

## Trends in the Economic Poisons Industry -2

Production of BEC increased from 8,000,000 pounds in 1947 to 57.5 million pounds in 1950 (12% gamma isomer basis). In addition to Kolbar Chemical, other producers are General Chemical, Hooker, Penn Salt, Dow, Westvaco, and Ethyl Corporation. Current industry requirements are estimated at 60-70,000,000 pounds (12% basis).

The increased use of the herbicide 2,4-D paralleled the growth of DDT. In 1945 total production amounted to just under 1,000,000 pounds and by 1948 this had increased to 22,000,000 pounds. At that time the use of 2,4-D was curtailed sharply because of injudicious use of the material in dust form causing appreciable losses to adjacent crops. As a result, laws were passed in several states which severely restricted its use. In order to help alleviate this problem, liquid forms of the herbicide were substituted for the dust. Current annual requirements are back to about 20,000,000 pounds. Chief producers of 2,4-D are Dow, Monsanto, and American Chemical Paint Company.

A more recent addition to the herbicide field is 2,4,5-T, generally referred to as the brush killer. No production figures for this material are available as yet, since it is ordinarily marketed in combination with 2,4-D. This compound is produced by the same companies that manufacture 2,4-D.

## Immediate and Long-Term Outlook for the Industry

The economic poisons industry lacks the secure basis of many of the chemical and process industries. Already mentioned is its dependence upon seasonal variations and degrees of infestation. For example, supplies fell short of demand in 1950, due to the unexpected severity of the infestations in the south. In the northeast, on the other hand, estimates of the demand exceeded the ultimate requirements, resulting in inventory accumulations. Thus far, the situation this year is just the reverse. At the beginning of the season production capacities which had been limited to the 1950 level were estimated to be insufficient to meet the demands. Infestation was expected to exceed that of the 1950 season because of the mild winter particularly in the south. However, the dry weather which prevailed during the early weeks of the season has reduced the requirements materially. One estimate places the needs at 75-80% of the 1950 level. In the northeast, the early predictions were for a good year with respect to insecticide demand, but heavy rains during the early part of the season have accelerated the requirements appreciably. Industry representatives are quick to point out that these trends could be reversed within a few days should there be significant weather changes. It is apparent, therefore, that in spite of the increased use of these poisons, the farmer still considers the materials as cures rather than as preventatives. Retailers are not inclined to carry substantial inventories, so that the peaks and depressions of the market are transmitted directly to the formulators and manufacturers of the basic materials.

The ready displacement and introduction of new materials further contributes to the manufacturers' insecurity. Chlordane is perhaps a good example of a material which had ready acceptance when first introduced, but is rapidly disappearing from the agricultural market, principally because of high costs.

### Trends in the Economic Poisons Industry -3

Diazophene is another material which was readily accepted because of its proven efficiency, but equally important, has been its availability at a slightly lower price than EHC and DDT.

Another factor contributing to the industry instability is the impending investigations of the Food and Drug Administration regarding toxicity and residual tolerances. Serious commercial limitations may result for specific materials if inadequately defended. Although future state and federal legislation will probably result in more stringent controls on the use of these materials, it is not contemplated that the industry as a whole will be affected significantly.

Farm income is another important factor to be considered in projecting the long-term growth of the economic poisons industry. In the post-war era, farm income has been at a high level, so that the influence of income has not been clearly defined. However, it is generally agreed in the industry that sales of economic poisons would be more sensitive to a drop in farm income than fertilizer sales, which have traditionally followed the pattern of cash farm income.

In the field of insecticides both DDT and EHC are firmly entrenched, both on the basis of performance and price, and the growth of these materials should parallel the general growth of the industry. As noted above there will be short term problems with respect to residual tolerances, legislative restrictions, etc., but these are not expected to have long-term significance. Industry representatives on the other hand feel that the growth of herbicides will probably be somewhat more spectacular than the insecticides. With the advent of 2,4,5-T, it should now be economical to reclaim vast acres of wastelands, particularly in the Southwest, which now are over-run with brush and mesquite. The rate of growth of this and other specialty products will be determined largely by the efficiency of educational programs for the farmer in their use.

### Foreign Markets

The foreign market for economic poisons is even more unstable than the domestic market. In addition to the factors mentioned above other influences are changes in government support policy, and fluctuating trade balances between countries. To date, DDT has been the most important compound in this market. With the exception of the Canadian and Hawaiian markets 2,4,D finds limited use abroad. EHC is now in considerable demand, but the export picture for this commodity is still unsettled. Both EHC and DDT were put under export license control in March of this year. Representatives of several government agencies, including the State Department, ICA and World Health Organization, estimate that the foreign DDT requirements for 1952 should be about 20,000,000 pounds. This figure seems to be consistent with export licenses which have been granted thus far. One of the principal uses for DDT is in the control of malaria. This program is supported principally by the State Department in connection with its Point 4 program. As an indication of the magnitude of the problem, over 300,000,000 people are subject to attack by this disease and only 1/4 of this number are in areas where control programs have been instituted.

## Trends in the Economic Poisons Industry -4

The foreign market is particularly sensitive to price, with almost all sales on a short-term basis. Very few long contracts are drawn up which makes it difficult for the larger, more conservative companies in the industry to participate in this market.

## Evaluation of Kolker's Status in the Industry

Because of the time limitation imposed by the option agreement between Diamond Alkali and Kolker Chemical, our evaluation of the latter company has necessarily been limited to summarizing the comments of a few selected contacts in the industry. In general, the industry regard for Kolker Chemical is high, although the company has been characterized by several industry representatives as a price conscious enterprise. The technical ability of both Mr. Lee Kolker, president, and Mr. John Brunton, sales manager, is generally respected, although in their sales relations they have been characterized as opportunists. Their price cutting policies reportedly have permitted them to negotiate short-term contracts with volume consumers as well as with export agencies. Also consistent with their reported operating policy is the practice of selling to competitors, such as Mathieson, apparently to establish a firmer position regarding raw materials.

The company devoted little time to the development of new products. However, it has been rumored that Kolker is planning production of a new miticide which has allegedly been patented by Dow. If true, production of this material could be an infringement of patent rights, but this possibility was cited as an example of the company's opportunistic policies.

Although many of Kolker's policies are probably not consistent with those of Diamond Alkali, Kolker probably offers as good an opportunity for Diamond to enter the economic poisons industry as any of the other small manufacturers today. This is also a good time to enter the field and establish a sales position, inasmuch as the founding of new companies and expansions by present producers are going to be limited by shortages of raw materials. Diamond, of course, has a basic raw material advantage which should permit the concentration of effort upon the realignment of distribution channels. Furthermore, it is presumed that Diamond's research facilities would be available to Kolker, as a subsidiary, to strengthen this phase of the latter's operations. With the large chemical companies such as Dow, duPont, and Monsanto active in the poisons field it is apparent that it will be necessary to establish a sound research and development program, which is now reported to be completely lacking, in order to protect Kolker's long-term position.