

CASE 5

W-G-P Chemical Company

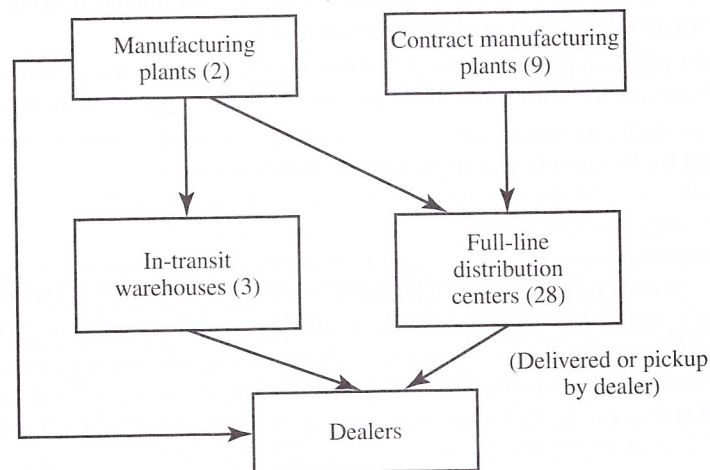
John White, vice president of distribution for W-G-P Chemical Company, was preparing for the annual strategy review session conducted by the firm's executive committee. He was charged with the task of evaluating his firm's logistics costs and customer service capability for his firm's packaged dry and liquid agricultural chemicals.

W-G-P Distribution Systems

Figure 1 outlines the existing logistics system for W-G-P Chemical Company. Four types of facilities are used: (1) two continuous, company-owned manufacturing plants; (2) nine seasonal contracted manufacturing plants; (3) three in-transit distribution centers; and (4) 28 full-line distribution centers. Growing environmental activism has influenced management to reject any relocation of the manufacturing plants. W-G-P distributes 129 different products or SKUs on a national basis. For distribution considerations, the products may be grouped into two different categories. Category A consists of 13 SKUs of a product called *Prevention*. The sales of *Prevention* are highly seasonal and account for 85 percent of W-G-P's total revenue. The 116 Category B products (called *Support*) sell throughout the year but also have a seasonal pattern similar to that of *Prevention*'s sales. Although the sales volume of Category B is only 15 percent of W-G-P's total revenue, this group of products contributes approximately 30 percent of total before-tax profits. The typical end user of W-G-P's products purchases a variety of both A and B products. In many cases, the products are used jointly in agricultural applications.

W-G-P's total product line is marketed through a network of agricultural dealers. The company sells to the dealers, who then resell the products to farmers. The typical dealer provides farmers with a broad line of products, including those that are directly competitive with W-G-P products. Historically, farmers tend to purchase both A and B products 1 to 2 weeks before field application. Application occurs at different times in different parts of the country and is directly related to the intensity of rainfall. Thus, W-G-P's products must be available precisely when the farmers need them. Likewise, the quantity needed per acre varies depending on the rainfall received in an area. Therefore, although W-G-P

FIGURE 1
W-G-P Chemical
Channel Flow



produces *Prevention* and *Support* all year, sales to farmers take place during a very short time period. Farmers' requirements vary in time and duration of use throughout the country.

To even out distribution to dealers across the year, W-G-P offers discount incentives and allowances to dealers who purchase at least 90 days in advance of estimated application dates. This early-order program accounts for 30 to 40 percent of the total annual sales of *Prevention* and *Support*. For the dealer, placing an early order means taking an inventory position on *Prevention* in advance of farmer purchases. However, since both *Prevention* and *Support* products are available, in effect, the early-order warehouse allowance means a special discount of the *Support* products which sell all year. To avoid abuse of the program, W-G-P requires that a proportional amount of *Prevention* products accompany each order. W-G-P also agrees to accept returns up to 15 percent of the total quantity of early-ordered *Prevention* products. The return policy requires a refund of the full purchase price providing dealers repay the return freight to W-G-P's warehouse.

The advantages afforded W-G-P through the early-order program are two-fold.

1. W-G-P can schedule shipments at its convenience to achieve the lowest possible transportation cost.
2. Dealers are given an additional discount if their own transportation equipment is used to pick up early orders, provided the cost is less than transportation paid for by W-G-P.

Seasonal sales, those sales which dealers buy within 90 days of estimated application dates, account for 60 to 70 percent of sales. Thus, to a significant degree, seasonal sales volume depends on W-G-P's ability to deliver products rapidly. During the seasonal period, dealers expect *Prevention* and *Support* to be available for pickup at distribution centers within a few hours of order placement. During this period, approximately 50 percent of the dealers pick up products. When transportation is arranged by W-G-P, dealers expect overnight delivery. Although the service level required during the seasonal period is high, these sales are very profitable for dealers because the farmers who purchase the products are willing to pay the full retail price. The capability to provide products during the application period is one of the most important criteria dealers use when selecting a chemical firm. Historically, sales have been concentrated in eight midwestern states which account for 80 percent of annual revenue. Table 1 presents a summary of the most recent data.

The distribution pattern for W-G-P products is relatively simple. Two company-owned manufacturing plants are located in Alabama and Louisiana. The Alabama plant produces *Support*, while the Louisiana plant produces both *Prevention* and *Support*. Both facilities are continuous-process plants, and their location at deepwater ports facilitates economical inbound raw material movement. The nine contracted seasonal manufacturing plants have passed the environmental audits and are strategically located at key transportation gateways.

The three in-transit warehouses are utilized because the manufacturing plants have only enough storage space for 2 or 3 days' production. Table 2 lists the in-transit facility locations.

Dollars	525,146,747
Weight (lbs.)	242,717,768
Cubic Feet	26,887,513
Cases	2,912,753
Product Lines per Order	25,392
Orders	19,139

TABLE 1
Annual Sales

Birmingham, AL
Memphis, TN
Alexandria, LA

TABLE 2
In-Transit
Warehouses

TABLE 3
Warehouse Locations

Indianapolis, IN	Brooklyn Center, MN
Memphis, TN	Rockford, IL
Ennis, TX	Memphis, TN
Alexandria, LA	Phoenix, AZ
Fresno, CA	Orlando, FL
Baton Rouge, LA	Milwaukee, WI
West Helena, AR	Goldsboro, NC
West Sacramento, CA	Des Moines, IA
Greenville, MS	Decatur, IL
Weslaco, TX	Columbia, SC
Omaha, NE	Pennsauken, NJ
Evansville, IN	Houston, TX
Albany, GA	Lubbock, TX
Montgomery, AL	Charlotte, MI
Birmingham, AL	Lima, OH
Kansas City, MO	

In terms of total system, the in-transit warehouses have three functions: (1) to provide storage until forward shipments are required; (2) to postpone the risk of advance shipments; and (3) to provide a combination of transportation rates that are lower to field distribution centers than the sum of published rates into and out of the in-transit warehouse. In a sense, the in-transit warehouses are economically supported by special transportation rates. All warehouses and distribution centers in the W-G-P system are public facilities. Therefore, W-G-P's costs are based on volume throughput and duration of storage. The 28 full-line distribution centers are primary facilities from which dealers are served. Although some early orders are shipped directly from plants and in-transit warehouses to dealers, they represent less than 10 percent of the annual tonnage shipped to dealers. Ninety percent of all tonnage is either shipped from or picked up by dealers at the full-line distribution centers. Table 3 provides a list of distribution center locations. Replenishment of distribution center inventories is primarily on an allocation basis controlled by central inventory planning. All orders are processed in an online basis at the central office after they are received over a telecommunications network. The elapsed time from order entry to shipment release from the distribution center is less than 24 hours. The primary method of shipment from plants to in-transit warehouses and distribution centers is motor carrier.

The System Review

A primary objective of the physical distribution system review is to evaluate the cost and service levels of the existing program in comparison with alternative methods of operation. Despite relatively smooth operations, the fact remains that at the end of each application season, many dealers' requirements have not been satisfied, while other dealers have returned inventory. Thus, sales are lost that could have been enjoyed if products had been available to the dealers in need. A critical element of customer service is forward inventory availability to accommodate customer pickup. In preparing the study, John White asked the Accounting Department to provide standard costs. The following standards were developed:

1. Order processing at a standard fixed cost per month with a variable cost per order.
2. Inventory at before-tax cost of 18 percent per annum of average inventory per field warehouse location.

Storage	\$ 3.1 Million
Handling	\$ 1.3 Million
Ordering	\$ 3.5 Million
Average Inventory Level	\$ 90.0 Million
Transportation to Warehouse	\$ 2.3 Million
Transportation Transfer between Distribution Centers	\$ 1.2 Million
Transportation to Customers	\$ 5.6 Million

TABLE 4
Distribution Cost

3. Handling and storage at actual local cost for each existing and potential facility. Appropriate storage rate applicable at in-transit warehouses.
4. Inbound transportation from plants and in-transit warehouses to field warehouses based on point-to-point rates.

Table 4 contains the costs for the reference year.

Questions

1. What is the total distribution cost for W-G-P Chemical Company? What is the cost per pound, cubic foot, case, line, and order? How can these measures contribute to the distribution review process?
2. On a map, plot the distribution facilities and network for W-G-P Chemical Company. What product and market characteristics can help explain this distribution structure?
3. What alternative methods of distribution should W-G-P consider for *Prevention* and *Support*?
4. Discuss the rationale for:
 - A. The early order program,
 - B. Customer pickup policies,
 - C. Use of public versus private warehouse facilities.

CASE 6

Western Pharmaceuticals (A)

George Castro had a lot to be proud of. His company, Western Pharmaceuticals, had just merged with the largest producer of over-the-counter (OTC) cold remedies on the East Coast. The merger with Atlantic Medical should guarantee coast-to-coast market penetration for both Western's upset stomach products and Atlantic's cough syrups. George had been selected to serve as CEO of the newly formed United Pharmaceuticals, and was rapidly becoming recognized as being one of the top Mexican-American business leaders in the country.

History

Western Pharmaceuticals had been founded by George's grandfather in post-war Los Angeles. Tony Romero's reputation for hard work combined with his strong pharmaceutical background made the introduction of his first antacid tablet an unqualified success