

## For Registration and Monitoring

# Companies Spend Heavily

The outlook for new pesticides is not necessarily a bleak one, nor is it optimistic. We might call it a guarded situation. Most companies in the industry are still spending heavily.

But their major increases in expenditures are for (1) registration

costs, (2) costs of maintaining approved registrations, and (3) testing and continued research on existing products. In short, the big spending is largely to protect chemicals already on the market or presently in the development stage.

Less effort apparently will be expended for (1) screening chemical compounds to determine whether they might contain some pesticidal activity and (2) synthesizing compounds for pesticidal screening — both practices related to discovery of new pesticide activity among chemicals.

These conclusions result from a survey of the industry research and development conducted by the accounting firm of Ernst & Ernst. The survey by the firm was conducted on 33 member companies of the National Agricultural Chemicals Association. The NAC employed Ernst

& Ernst to collect and tabulate confidential data and make their report without disclosing information which might reveal operations of individual companies.

The firm was assisted by a task force committee of NAC directors. On the three-man team was Jim Ross, Monsanto, Ken Givens, Hercules, and R. C. Lindstaedt, Elanco. Data on the study completed in May were released in a Washington, D.C. press conference on May 26. It constituted the first specific data made available on costs in time and money for putting pesticides on the market. This report constitutes a summary of the survey as presented to the trade press. Opinions accompanying data in this report are those of the editorial staff of this magazine and were not necessarily a part of the Washington press session.

Basically, the survey covered the years 1967 through 1970, and in some

**Table 1. Pesticide industry sales for 1969.**

	Pesticide Sales (\$Millions)
Total Pesticide Industry *	\$ 851
Participating Companies **	\$ 693
Percent of Total Industry	81%

\* Per U.S. Tariff Commission Report 7/31/70

\*\* 33 Participating companies

**Table 2. Pesticide sales of 33 NAC participating companies.**

	1967 (\$Millions)	1970 (\$Millions)	% Change (1967-70)
Domestic Sales	\$517	\$602	+16%
Export Sales	122	120	- 1%
Total pesticide sales	\$639	\$722	+13%

**Table 3. Pesticide R & D expenditures of 33 participating companies.**

TYPE OF EXPENDITURE	1967 \$Million	1970 \$Million	% Increase 1967-70	EST. 1971 \$Million
Synthesis & Screening	\$17.7	\$22.0	24%	\$21.3
Field Testing & Development	15.9	22.3	40%	22.7
Toxicology & Metabolism	6.9	9.1	32%	10.5
Formulation & Chemical Development	8.9	12.3	38%	12.8
Registration & Other	2.9	4.2	46%	4.3
Total R & D expense	\$52.4	\$69.9	33%	\$71.6

**Table 4. Relationship between pesticide sales and R & D expenditures of participating companies.**

	1967	1970	% INCREASE 1967-70
Pesticide Sales (\$Millions)	\$639	\$722	13%
R & D Expenditures (\$Millions)	\$52.4	\$69.9	33%
R & D Expenditures as a Percent of Sales	8.2%	9.7%	

**Table 5. Industry estimates of typical pesticide development requirements.**

	1967	1970	% Increase 1967-70
Cost of Discovery & Development	\$3.4 Mil	\$5.5 Mil	60%
Elapsed Time from Discovery to Marketing	60 Mos	77 Mos	28%
Number of Compounds Screened for Each New Product Marketed	5481	7430	36%

instances included plans for 1971. Of total industry sales of \$851 million in 1969, some 81% or \$693 million was made by the 33 NAC members studied in this report.

The 33 NAC companies reported \$69.9 million in pesticide research and development (R & D) expenditures for 1970. This was an increase of 33% over '67. The same group also expects to spend about \$1.7 million more in 1971. But if 5% is allowed for inflation during the past year, this increase in dollar cost will actually represent a decline to about \$68 million — if compared with the \$69.9 million of '70.

Formulation and chemical development increased 38% from '67 through '70. Toxicology and metabolism was up about 32% and both are expected to increase during 1971. Synthesis and screening was up 24% over the three years and is expected to be down in '71.

An important measure of the degree of industry effort — for which the industry deserves commendation — is the number of man years expended for R & D. A total of 2768 man/years was applied to pesticide R & D activities in 1970. This amounted to a 17% increase over 1967. Plans for '71 would indicate almost 100 fewer man/years will be expended than a year earlier. Overall, the data indicate that the upturn in R & D in recent years has reached a plateau.

R & D activities have increased rapidly when compared to sales. Between '67 and '70 sales of pesticides were up 13%. At the same time R & D activity costs climbed 33%. Despite the inflation-effect in both figures, R & D costs were increased more rapidly than sales, all of which indicates that the industry is doing more exhaustive testing and more monitoring of existing products.

By way of summary of this point, almost 10% of pesticide sales dollars are applied to overall R & D.

NAC companies spent \$16 million for regulatory maintenance (as a part of the overall R & D funding) in '70 — or about twice the level of three years earlier. Apparently, '71 will be about the same as '70.

Important in the overall picture is that new developments and new methods of research and evaluative work have made possible more sophisticated testing. These new approaches are costly and probably account for much of the increase in costs.

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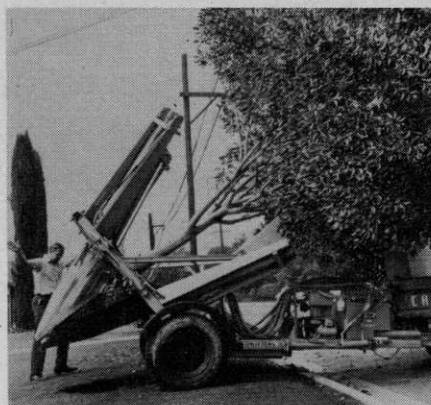


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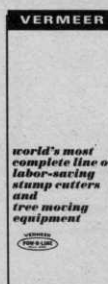


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**Table 6. History of 57 products from 30 NAC companies including 22 herbicides, 20 insecticides, and 7 fungicides.**

	Averaged Elapsed Time (Months)
From first screening to decision to develop	33
From decision to develop to first registration submission	19
From first registration submission to approval	11
Average R & D man/years From Screening Thru Approval	49 yrs

is that the companies plan to screen some 2800 fewer chemical compounds this year than a year earlier. Likewise, they will synthesize 1400 fewer compounds in seeking to identify pesticidal activity.

More R & D personnel in recent years have been added with advanced degrees. Number on company R & D staffs with doctoral

degrees was up 23%, with masters and bachelor degrees being up somewhat less. Again, a minor decline is anticipated.

Pesticide development requirements in this survey are based on a summary of opinion rather than factual data. Companies in the survey put the cost of discovery and development of a pesticide at \$5.5

**Table 7. Registrations cancelled or suspended for 33 participating companies.**

	1968	1969	1970
Products Removed Entirely From Market	25	18	123
Restrictions Placed On Existing Registrations Which Cancel or Suspend:			
Certain Crop Applications	497	354	331
Certain Product Formulations	(D)	34	37
Use in Certain Geographical Areas	(D)	34	8
<b>Total restrictions</b>	<b>717</b>	<b>388</b>	<b>376</b>

(D) Insufficient Data

million in 1970, up 60% in three years. They estimate some 77 months or almost 6½ years to take a compound from discovery to marketing — an increase of 28% in time over '67. The estimate of the average number of compounds which have to be screened for each marketable product is 7430 — up 37% over '67.

Key points in a summation of this industry study would seem to be that: (1) R & D costs grew faster than sales, now amounting to about 10% of total sales; (2) R & D activity has increased in recent years but a downturn is indicated; (3) Registration costs are the fastest growing segment of R & D; (4) Effort applied to R & D work to monitor current products has more than doubled since '67; (5) There is a dramatic increase in the number of products removed from market; and finally, (6) Time required for registration has increased substantially.

### Golf Course Architect Offers Construction Article

The firm of Robert Muir Graves Golf Course Architect is offering an article published as result of a presentation by the firm to anyone associated with the golf industry.

Mr. Ronald W. Fream of the firm has announced that the article, "Build It Right the First Time," is available by contacting the firm at 3186 Old Tunnel Rd., Lafayette, Calif. 94549. There is no charge.

The original text was first presented to the 1970 Southern California Institute.



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