

## A PUNCHED CARD SYSTEM FOR AN ANALYTICAL LABORATORY

BY ASA N. STEVENS  
Eli Lilly and Company, Indianapolis, Ind.

The quality control laboratories of the pharmaceutical industry are responsible for the identity, potency, and purity of the life-saving drugs your doctor uses to cure your ills. Under the statutes protecting your health, we must retain data to show that our products meet the requirements under which the Food and Drug Administration allows their use. Thus, the documents containing the data, particularly their storage and retrieval, are important.

About four years ago it was proposed that a study be made of the records produced in our analytical laboratories and that the use of punched cards as a means of storage and retrieval of information be investigated. This study, made by a team composed of personnel from the control and office systems functions of our company, revealed, among other things, that it required 23 working days each month to accumulate, compile, and prepare the monthly reports required by our management. More striking, however, was the number of man hours per day spent in checking and distributing samples, preparing report forms, and recording data on documents. Each day the equivalent of about nine technically trained people were bogged down with paper work.

After a thorough study of our flow charts and reports, we concluded that if we could establish a central area to receive and distribute the samples going into the Analytical Departments, retain all documents accompanying these samples in one location, and establish a central records area, we could relieve technically trained people of a lot of paper work and place our laboratory data on punched cards without altering the essential operations of the analytical departments.

Also, if the punched cards were designed properly, we would have better control of sample distribution, be able to consolidate and unify reports, and have an improved, integrated system which would be more efficient and economical to operate. Furthermore, punched cards should provide flexibility for retrieving, compiling, and printing data for cost analysis, statistical studies, and evaluating the efficiency of analysts, groups, and departments. They should also help management in forecasting manpower requirements.

The success of any system using punched cards depends upon the meticulous design of the card itself. This is particularly true of a punched card which is to be used to report the analytical results of a pharmaceutical product. First of all, it is a document which may be used in court. Therefore, it must contain all the information necessary to identify the product and batch, verify the analytical results, tell us who did the assay and when, the method used, and whether or not the analysis is within our control limits.

Second, our cost accountants wish to know how much time (man hours) it takes the chemist to do the assay, what department wants the work done, what department does the work, what account to charge the work to, and if the product requires a pharmacological test, what kind and how many animals are used (rats, mice, monkeys, etc.). They also need to know, in the case of a purchased material, where we bought it and the supplier's lot number. Table I illustrates the fields we chose in putting this information in IBM cards. This facilitates machine handling. We use one card for Finished Products, another for Purchased Materials. Note that similar fields are in the same position on the two cards.

In the IBM card shown (Fig. 1) A designates the fields, B designates that portion of the card

TABLE I

Finished Products		Purchased Materials	
Field	Column	Field	Column
Item Code	1-6	Item Code	1-6
Charge To	7-9	Charge To	7-9
Lot Number	10-15	Lot Number	10-15
Section	16-17	Section	16-17
Dept. Submitting Sample	18-20	Dept. Submitting Sample	18-20
Type Sample	21-23	Type Sample	21-23
Dept. Doing Assay	24-26	Dept. Doing Assay	24-26
Blank	27-31	Vendor Code	27-31
Tub File Location	32-34	Tub File Location	32-34
Assay For	35-43	Assay For	35-43
Man Hours	44-47	Man Hours	44-47
Method of Analysis	48-49	Method of Analysis	48-49
Date In	50-53	Date In	50-53
Blank	54-61	Vendor Control No.	54-61
Fatal Animals	62-66	Fatal Animals	62-66
Date Out	67-71	Date Out	67-71
Analyst	72-74	Analyst	72-74
Assay Results	75-79	Assay Results	75-79
Disposition	80	Disposition	80

A

1. Practically eliminate the paper work done by analysts, allowing them more time for analysis.
2. Establish better control of assay sample processing.
3. Provide daily inventory and production reports.
4. Forecast manpower requirements.
5. Provide flexibility for retrieving, compiling, and printing data for cost analysis, statistical studies, and effectively evaluate the efficiency of analysts, groups, and departments.
6. Consolidate and unify reports.