It is perhaps correct and certainly prudent at this time to assume that there is no threshold dose as far as "primary" carcinogens are concerned. However, there are a number of "secondary" carcinogens, the carcinogenic activity of which is consequential to some other effects of these chemicals. For example, a substance when administered in large quantities may precipitate out from the urine and form bladder stone. The bladder stone in turn irritates the bladder, and as a result malignant tumor may develop.

A pharmacological action may also be the cause of cancer. For example, substance *X* inhibits the formation, release, or activity of thyroxin. This inhibition, among other things, raises the blood level of thyrotropic hormone. Malignant tumors in the thyroid may then develop, as a result of excessive stimulation by the thyrotropic hormone and possibly other factors. Since the solubility of a substance in the urine and the thyroxin-depressant action as well as other, similar pharmacological actions are readily definable and a "no-effect" level can be established, it appears that a noncarcinogenic dose exists in these cases. In other words, a safe dose for use of these chemicals as food additives may be worked out by the procedure adopted for chemicals possessing other types of toxicological action.

It may be argued that this proposal is not helpful because the mode of action of most carcinogens is unknown. However, if this distinction were more generally recognized, there would be incentive for scientists to carry out further research along this line.

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Indexing

Taken in the context of mechanical handling of information, the point raised by John R. Clark (*1*) has important implications. Given a lexicon of those words not to be indexed, electronic computers can create concordances from any portion of a paper, from the title up to the full text. A rapid, relatively inexpensive method of preparing a concordance is to make use of the words contained in the title of a paper. The keyword-in-context index, which was first proposed by Luhn (*2*) and which is now exemplified by the *Chemical Titles* current awareness service of the American Chemical Society, illustrates the use of titles in this manner.

Regarded analytically, a title may therefore be considered to be a collection of terms that help a reader to classify the paper in his mind, together with a set of connectives to show the relation of the terms to one another. Thus, if titles are to be used for machine preparation of concordances, the burden of providing suitable terms is in the hands of the author and the journal editor. Provision of suitable terms should be, not a "slight extra burden," but the key consideration in titling a paper.

Authors might, for instance, write down the terms they consider most suggestive of the content of their papers, then supply the necessary connectives in order to form the title. Of course, if the author has prepared 50 new chemical compounds he cannot list all of them in the title. As a general rule, one might say that he should use the most specific generic term (or small group of generic terms) available to him.

In terms of a thorough subject index, Clark has made the problem appear to be overly simple. The author of a paper is an authority on the work he has done, but there are problems of semantics, synonymy, specificity versus generality of terms, and nomenclature with which the untrained author cannot be expected to cope. The amount of time necessary to train an indexer is not available to scientist-authors. In addition, an author would find it time-consuming to try to decide which terms would be of interest to scientists in fields other than his own. Fleischer and Hooker have illustrated this point with regard to abstracts (*3*).

"Suitable standard systems of indexing" seem to be a practical impossibility for authors where traditional subject indexes are concerned. Authors do have the opportunity to improve titles so as to make machine-prepared concordances more effective.

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