OIL CHEMISTRY RESEARCH— INFORMATION FROM THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

What's going on in ongoing research?

The Smithsonian Science Information Exchange (SSIE) can help you find out. Since 1949, when it was established as the Medical Sciences Information Exchange, SSIE has served chemists, biochemists, and research program managers by maintaining a file of information about research in progress.

Prepublication information can help avoid unwitting duplication of research effort. It can also help keep colleagues working in similar areas in touch with the latest activities in their fields of interest..

The SSIE Data Base

SSIE collects, indexes, and disseminates prepublication information about research in progress in all fields of the life and physical sciences, including research in animal and vegetable fats and oils. The current file contains descriptions of projects initiated or initiated and completed during the past two years—in all, more than 200,000 records of research in all fields, from agriculture to theoretical mathematics. The information is collected from over 1,300 organizations that sponsor research. Approximately 80 percent of SSIS's information is provided by agencies of the U.S. federal government, and the balance comes from other supporting organizations.

The active file now includes descriptions of about 500 projects in research on animal and vegetable fats and oils. This covers research on oils and fats in foods and feeds; in lubricants, paints, and soaps; as well as basic research in oil chemistry itself. Recent searches of the file, for example, have been conducted on "synthesis and characterization of new interpenetrating polymer networks based on castor oil," "chemistry of food lipids," and "characterization of oilseed components and derivatives by NMR spectroscopy."

The basic record in the SSIE system is the single-page Notice of Research Project (NRP) illustrated on page 00. Most NRPs include a technical summary, as well as the supporting organization name, project title, investigator name(s), and performing organization name and address. Notices of Research Projects usually are collected when grants or contracts are awarded, so they are available for retrieval well before progress or final reports are presented at meetings or in professional journals.

Indexing and Retrieval

To meet the needs of a variety of users, SSIE scientists employ a hierarchial subject indexing system to code project descriptions for retrieval. Subject terms are arranged in hierarchies representing broader to narrower concepts. When NRPs indexed to a broad field are identified for retrieval, those indexed to narrower terms beneath it also are retrieved. This means that SSIE sceintists can search the data base with equal facility for requestors who need information at broad levels, such as research directors and planners, as well as for those requiring information on specific research problems, such as bench scientists.

The scientists who index project descriptions in their respective fields also search the data base in response to user requests. For this reason, search requests can be submitted using the language of the field, and lists of keywords or thesaurus terms are not necessary.

Search Services

SSIE provides a full range of search services, including the following:

Custom searches: Searches are conducted by subject, organization name, geographic location, or combinations of these according to individual requests. SSIE scientists review the results to insure that search contents are relevant.

Research information packages: A number of subject searches designed in advance are provided at costs that represent a savings over the cost of custom searches.

SSIE also offers Selective Dissemination of Information services and searches by investigator name or project number.

On-line service: Users who wish to search the SSIE data base directly from their computer terminals may do so through System Development Corporation's SDC Search Service. SDC, in Santa Monica, CA, provides on-line searching for a number of bibliographic data bases, such as Chem Abstracts, NTIS, and Pollution, as well as information on research in progress from SSIE.

To assist the on-line user in developing search strategies, SSIE has compiled a list of 40,000 index terms from SSIE's hierarchical indexes, plus 50,000 synonyms and cross references for these terms, in alphabetical order.

SSIE Notice of Research Project

FORM APPROVED OMB NO. 105 R0002 EXPIRES 11/78

SMITHSONIAN SCIENCE INFORMATION EXCHANGE
Room 300 • 1730 M Street, N.W. • Washington, D.C. • 20036
Telephone (202) 381 4211 • Telex 89495

SSIE NUMBER: GY-40156-3

NOTICE OF RESEARCH PROJECT

SUPPORTING ORGANIZATION: U.S. DEPT. OF AGRICULTURE; AGRICULTURAL RESEARCH SERVICE; EASTERN REGIONAL RES. CENTER
SUPPORTING ORGANIZATION NUMBER(S): 0040156; 1402-16060-002

PROJECT TITLE:
SECOND GENERATION OF TALLOW SOAP-BASED PHOSPHATE-FREE DETERGENTS

INVESTIGATOR(S): WM LINFIELD
DEPARTMENT/SPECIALTY:

PERFORMING ORGANIZATION:
U.S. DEPT. OF AGRICULTURE
EASTERN REGIONAL RESEARCH CTR.
600 E. MERMAID LN.
PHILADELPHIA, PENNSYLVANIA 19118

PERIOD FOR THIS NRP: 10/76 TO 9/77; FY77; FUNDS UNKNOWN

PROJECT SUMMARY:

OBJECTIVE: Develop improved tallow soap-based detergents comparable in performance and cost to commercial detergents.

APPROACH: New lime soap dispersing agents (LSDA), especially those of the amphoteric type, will be tested for surface properties and effectiveness. These LSDA will be incorporated in soap-LSDA-builder formulations with the view of preparing products which are high in performance characteristics and low in cost. Compatibility of the formulations with inexpensive inorganic salts will be studied, particularly with regard to resistance to attenuation of detergency due to water hardness. Evaluation of formulations will be carried out on a variety of test fabrics, including cotton-polyester with permanent press finish. Promising products will be studied with respect to their potential ecological impact.

PROGRESS: Pilot and plant production runs of a formulation of 65% tallow soap, 20% sodium methyl alpha-sulfotallowate (TMS), 14% sodium silicate ($Na_2O:SiO_2$ 1:2.0) were carried out in a soap plant. Equipment limitations require the dispersing agent (LSDA) TMS to have a low moisture content to achieve smooth drying. The two products were of inferior detergency compared with laboratory preparations. Repeated washings of flameproofed cotton with such a detergent showed that flameproofing was not impaired, whereas washing with soap alone caused loss of flameproofing. Repetitive washings with soap produced substantial buildup of Ca and Mg containing residues, whereas washing with the soap-LSDA formulation gave almost none. This difference in buildup was confirmed visually by scanning electron microscopy. Carbonate-built phosphate-free commercial detergents gave incrustation of the fabric, whereas a phosphate-built one did not. Dispersions of soap-LSDA mixtures in hard water were filtered through membrane filters which retained the dispersed material. In these filter residues soap was present as a mixture of calcium and magnesium salts. The ratio of soap to LSDA was about the same as that of the original formulation. A variety of LSDA (See 1402-16060-003) were evaluated for suitability in soap-based detergent formulations.

SI-SSIE 76