W.R. GRACE & CO.

RESEARCH DIVISION

Washington Research Center, Clarksville, Maryland 21029

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CONSOLIDATED MONTHLY SUMMARY

DECEMBER 1970

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Washington Research Center, Clarksville, Maryland 21029

January 22, 1971

MONTHLY REPORT FOR DECEMBER 1970

CONSOLIDATED EDITION

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NOT TO GO OUTSIDE U.S.

This report contains information on the following activities at the Washington Research Center.

INORGANIC RESEARCH

I-1 AUTO EMISSIONS CATALYST
I-2 NEW MOLECULAR SIEVE COMPOSITIONS
I-3 ZEOLITE STABILITY AND ACTIVITY
I-4 LEAF AUTOMATION
I-5 ALFALOX CUTTING TOOLS
I-6 KEMALOX POWDER
I-7 ELECTRONIC SUBSTRATES
I-8 ADVANCED NAVAL FUELS
I-9 ADVANCED SPACE FUELS

ORGANIC RESEARCH

O-1 POLYMERIC ADHESIVES - CAN END FASTENING SYSTEM (D&A)
O-2 CAN COMPOUNDS - OVERSTRIPE FOR CONOWELD SIDE SEAM
O-3 PACKAGING MATERIALS - NON-HALOGENATED BARRIER MATERIALS
O-4 FOAM STUDIES - CPL COOPERATIVE STUDY
O-5 ADHESION STUDIES, CRYOVAC COOPERATIVE STUDY
O-6 EXPLORATORY PROJECT - PHOTOCHEMISTRY STUDIES - PHOTOACTIVATION OF CONVENTIONAL POLYMER CURING AGENTS
O-7 FIRE RETARDANT FOAMS - CPD
O-8 RELEASE COATINGS - ENDURA
O-9 REWETTABLE WALLPAPER ADHESIVES - ENDURA
O-10 ADDITIVES TO POLYOLEFINS
O-11 SILICA-BASED CHELATING MATERIALS
O-12 FIRE RETARDANT MATERIALS

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CLP TASK FORCE RESEARCH

C-1 LETTERFLEX B QUALITY CONTROL
C-2 LETTERFLEX SUPPORT - COMPETITIVE PLATES
C-3 ULTRAVIOLET CURABLE INKS
C-4 CLP INK FEASIBILITY STUDIES
C-5 CURABLE LIQUID POLYMERS - PHOTORESISTS
C-6 CURABLE LIQUID POLYMERS - NEW APPLICATIONS FOR CLP MATERIALS
C-7 CURABLE LIQUID POLYMERS - CLP PRESSURE SENSITIVE ADHESIVE
C-8 CURABLE POLYMERS - DARK STABILITY
C-9 CLP MATERIALS TECHNOLOGY - HIGH M.WT., SOLID SYSTEMS
C-10 LOW COST POLYTHIOLS FOR CLP TECHNOLOGY
C-11 INSTRUMENTATION FOR CLP's
C-12 CLP OFFSET LITHOGRAPHIC PLATES

AGRICULTURAL RESEARCH

A-1 WASTE WATER CLEAN-UP AND BY-PRODUCT RECOVERY
A-2 REFORMULATION AND EVALUATION OF MONO-KOTE
A-3 VERMICULITE-MOSS PLANTING DEVICES

BIOCHEMICAL RESEARCH

B-1 ADAPTED RUMEN MICROBES (ARM)
B-2 "CHRON-X"
B-3 SALTS OF ISOBUTYRIC ACID AS POULTRY FEED ADDITIVE
B-4 AMMONIUM ISOBUTYRATE AS SILAGE PRESERVATIVE
B-5 FERMENTATION SCREENING PROGRAM
B-6 L-DOPA

GOVERNMENT CONTRACT OPERATIONS

G-1 NEW PROPOSAL - OIL RECOVERY SYSTEM USING SORBENT MATERIALS
FEDERAL WATER QUALITY ADMINISTRATION - WASHINGTON, D. C.
(RFP-WA-71-531)

OTHER R & D

OT-1 THE GRACE SUGAR PROCESS
OT-2 SYNOPAL

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These items are included in the various editions of the report as shown below:

ACG Edition	A-1,3; B-1,2,3,4,5
DAV Edition	I-1,2,3,5,6,7; O-11,12
D&A Edition	O-1,2,6; C-2,3,4,8,9,10,12; B-5,6
P&CD Edition	O-3,6,12; C-1,2,3,4,5,6,7,8,9,10,11,12
CPD Edition	O-4,6,7,12; A-2,3; G-1; OT-2
PFD Edition	O-8,9,12; C-1,2,3,4,5,6,7,8,9,10,11,12
HAMP Edition	O-10,11,12; B-6
European Edition	I-1,2,3; O-6,8,9,10,12; C-1.2.3.4.5.6.79,12; G-1; OT-1,2
PLAD Edition	O-6,10,12; G-1; OT-2
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Consolidated Edition	All Items

A-2 REFORMULATION AND EVALUATION OF MONO-KOTE (Project 2659)

Eleven Mono-Kote (MK-3) formulations containing the various additives selected at the meeting with CPD on November 9th were evaluated for bond strength using the Veltman-Kraus firecup test at 800°F. Four of the additives, $COSO_4$, Na_2Al0_2, KOH and $MgC0_3$ increased the bond strength over the basic formulation. The addition of 1% $Na_2B_4O_7$ to the Mono-Kote formulation (MK-4) increased bond strength to a level approaching that of MK-3. These tests are being repeated to determine reproducibility and tests will be made on other additives, especially phosphate rock, to the MK-4 formulation.

(Kraus)

A-3 VERMICULITE-MOSS PLANTING DEVICES (Project 4815)

The Keyes Fibre Company, Graybar Bldg., New York, has expressed a desire to discuss possible arrangements for licensing the Grace vermiculite-moss planting device technique. Mr. Chester Cobb, Vice President-Market Development, states that their study shows that Planting Devices would be valuable as an adjunct to their present business. In their opinion, the devices could not support a sales effort by itself but, as we already know, Keyes is planning to bring out a loose type potting earth similar to Redi-Earth for this current season. They would like to be in a position to start marketing the compressed product for the 1972 season. As considerable time is required to arrange for the purchase and delivery of the compression equipment, it is not too soon to start developing the basis for the licensing arrangement now. Mr. Cobb stated that he would like to meet with Grace within the month.

(Legal, Kolbe)

BIOCHEMICAL RESEARCH

B-1 ADAPTED RUMEN MICROBES (ARM) (Project 4623)

A review of the results of the ARM feeding tests in Phase I of the program led to the conclusion that it would not be feasible to submit a New Drug Application (NDA) to FDA because of the inconsistencies in performance of the treated cattle. Phase II of the program which involves treating 2000 head was slow in starting because of the slowdown in movements of large herds of feeder cattle to feedlots. We are advised by Farr Better Feeds that movements are expected to increase substantially after the first of the year.

Our objective is to have at least 1000 head of feedlot cattle on ARM feeding tests by January 31st and 2000 head by the end of February.

Arrangements have been made for two ARM feeding tests in early January at the High Plains Feedlot and Moody Farms, respectively. A total of 390 head will be treated (390 controls).

(Myrick, Hahn and Jessup)

B-2 "CHRON-X" (Project 4640)

Four statistically significant feedlot tests have been completed on the use of ARM for getting "chronics" back on feed.