



MANUFACTURING CHEMISTS ASSOCIATION

1825 CONNECTICUT AVENUE, N. W. • WASHINGTON, D. C. 20009 • (202) 463-6128

M. Johnson - Board - Med
Mrs. Rousch - M. M. M. Med.
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JOF interested March 19, 1973

(over for notes of 4/4/73)

To: VINYL CHLORIDE RESEARCH COORDINATORS
TECHNICAL TASK GROUP ON VINYL CHLORIDE RESEARCH

Subject: Minutes of the Meetings of February 20 and
March 13, 1973;
Notice of Joint Meeting, Wednesday, April 4, 1973

Gentlemen:

Enclosed are the subject minutes. Your attention is particularly directed to item 7 in the minutes of the March 13 meeting, and the request there made for a joint meeting of the two groups to decide on their recommendations concerning industry support of (1) a small extension of the Industrial BIO-TEST Laboratories, Inc. study to determine whether the positive findings of the European group might be ascribed to the result of interactions between the monomer vapors and food and/or bedding, and (2) an epidemiology study by Tabershaw-Cooper Associates, Inc. to study exposed populations among industry employees.

An excerpt of pertinent sections of the Tabershaw-Cooper proposal is appended to this letter.

The Coordinators urge that requests for industry support of the epidemiology study be formulated in such a way that MCA can be asked to administer the study and to contract with Tabershaw-Cooper when as few as 70% of the industry has responded favorably. They have expressed the hope that this can be accomplished in time to put the question of MCA participation before its Board at their April 13 meeting.

Attached hereto is a table of "lower" and "upper" limits of the costs of the study to each company based upon the listed PVC and VCM capacities and the assumptions, in the case of the "lower limit" that (1) all sponsors of

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the present project would join in support of the epidemiology study, and (2) that the study could be completed without drawing upon contingency funds. The "upper" limit calculation is based upon the assumptions that (1) only 70% of the industry will support the study, and (2) that all contingency funds (30% of project base cost) will be required. Each company is asked to commit itself to the extent of the "upper" limit figure, with the expectation that actual prorated costs will be somewhat less.

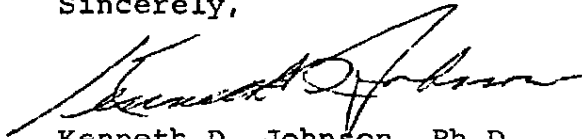
You are asked to recognize that this will be a short-term study, and that most of the costs may be expected to fall due in calendar 1973.

The meeting has been scheduled for Wednesday, April 4, from 10:00 AM to 4:30 PM, at the Hospitality House Motor Inn, 2000 Jefferson Davis Highway, Arlington, Virginia (near National Airport). Their telephone number is (703) 920-8600. A block of rooms has been set aside for our members. Please phone in your room reservation requests as quickly as possible.

The Inn operates a courtesy shuttle bus service to and from the airport, and has courtesy telephones at convenient locations throughout the airport.

A buffet luncheon will be served at noon.

Sincerely,



Kenneth D. Johnson, Ph.D.
Secretary

KDJ:mb

Attachments

CC: Dr. D. P. Duffield
Mr. D. M. Elliott
Dr. Tiziano Garlanda

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Manufacturing Chemists Association

Minutes of Meeting

VINYL CHLORIDE RESEARCH COORDINATORS
(Epidemiology Study Meeting)

MCA Conference Room

Washington, D. C.

February 20, 1973

MEMBERS PRESENT:

T. R. Torkelson, CHAIRMAN	The Dow Chemical Company
Z. G. Bell, Jr.	PPG Industries, Inc.
W. D. Harris	UNIROYAL, Inc.
R. L. Maycock	Shell Chemical Company
W. E. McCormick	B. F. Goodrich Chemical Company
W. E. Rinehart	Ethyl Corporation
R. N. Wheeler, Jr.	Union Carbide Corporation

GUESTS PRESENT:

E. L. Jaffee	PPG Industries, Inc.
M. G. Ott	The Dow Chemical Company
W. M. Smith	Air Products & Chemicals, Inc.

REPRESENTATIVES OF POTENTIAL EPIDEMIOLOGY
STUDY CONTRACTORS PRESENT (afternoon session):

W. R. Gaffey	Tabershaw-Cooper Associates
J. G. Keller	The Eppley Institute for Research in Cancer
Richard Monson, M.D.	Harvard School of Public Health
R. O. Smith	University of Michigan
Irving Tabershaw, M.D.	Tabershaw-Cooper Associates

MCA STAFF PRESENT:

A. C. Clark	MCA
K. D. Johnson	MCA

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1. Minutes of Meeting of January 30, 1973

No additions or corrections were offered to the subject minutes; they were approved as distributed.

2. Relocation of Facility

The Coordinators were informed that Industrial BIO-TEST Laboratories, Inc. has acquired additional facilities at Decatur, Illinois, and is moving all inhalation toxicology work to that site. It was agreed that, before animal exposures were begun, a delegation from the Coordinators should visit the Decatur laboratories and discuss vinyl chloride handling procedures and experimental details with the staff at that facility.

Some concern was expressed that lighting in the chambers be held at levels that will minimize opportunity for photochemical decomposition of the monomer. The possible formation of bis chloromethyl ether as a decomposition product was postulated. *Unlikely*

3. Reaction of Vinyl Chloride with Food or Bedding

It was agreed that, if possible, a parallel study should be conducted with rats, in which food and bedding remains in the animal cages during the vinyl chloride exposures. The secretary was asked to obtain from Industrial BIO-TEST Laboratories, Inc. the cost of adding such a group of 100 rats, all of one sex, to the 5,000 ppm exposure chamber.

It was the consensus of the group that this proposal ought not be allowed to delay the start of the presently approved program, but the hope was expressed that this expansion of the test program could be conducted within the limits of the remaining contingency funds, and that the new test group could employ controls of the main experiment. The Coordinators voted to request MCA to authorize use of contingency funds for this purpose.

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*Total increase
\$15,000
unrecovered in 1970*

Dr. Torkelson agreed to try to expedite the response to his inquiry on whether Dr. Viola's experiments had involved exposure of food and/or bedding to the vinyl chloride vapors.

4. Review of Data Available for Epidemiology Study

Only scattered and incomplete returns from the MCA inquiry of February 2 had been received at the time of this meeting. The only generalizations that could be derived from these returns (11 companies operating 25 plants) are summarized below:

- Current employment in these plants approximates 2,500. It is estimated that this represents about half of the employment in the industry.
- The plant locations are scattered throughout the eastern United States and the Texas-Louisiana Gulf Coast. Only one plant was reported in the far west.
- Perhaps half of the present employees have exposure histories dating back ten years or more, and a substantial fraction date back as long as twenty years ago.
- Recent exposure histories have been almost entirely classified as "light." More than ten years ago, most were classified as "moderate" or "severe."
- Among the five companies reporting on deceased employees, 72 cases were identified, with a presumption that in almost all cases death certificates would be available.
- The same five companies reported about 900 terminated employees with significant histories of vinyl chloride exposure. Estimates of those presently locatable ranged from 50% to 100%.

5. Scope of Epidemiology Study

It was agreed that, both for the value of the added data and the need to defocus the concern over carcinogenicity, that the investigators should seek information on liver and

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kidney changes, gross morbidity and gross mortality. The possibility was raised that this study might be broadened to cover the general area of chlorinated solvents, but no group recommendation was made at this time.

6. Review of Chemical Safety Data Sheet for Vinyl Chloride, SD-56

A task group composed of Dr. Z. G. Bell, and Messrs. W. E. McCormick and R. N. Wheeler was appointed to develop recommendations on the need for, and substantive changes they would recommend, a revision of the subject data sheet.

7. Meeting with the Representatives of Potential Contractors for the Epidemiology Study

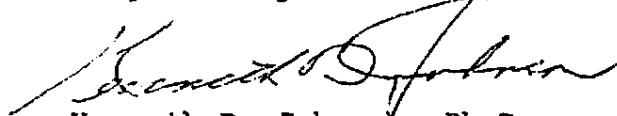
Representatives and organizations identified in the attendance roster were present at an afternoon session to discuss our needs and availability of background data preparatory to their submission of proposals. It was stressed that the contractors were to function as independent professionals, and submit a proposal that, in the judgment of each, was a "best value" proposal, and not necessarily a lowest cost one.

They were asked to have proposals in MCA's hands by March 9 as a target date, and in any event, before the next meeting of the Coordinators.

8. Future Meeting Schedule

The next meeting of the Research Coordinators is scheduled for 9:00 AM, Tuesday, March 13 in MCA's Large Conference Room (Room #404).

Respectfully submitted,



Kenneth D. Johnson, Ph.D.
Secretary

Minutes Subject to Approval
March 12, 1973
KDJ:mb

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Manufacturing Chemists Association

Minutes of Meeting

VINYL CHLORIDE RESEARCH COORDINATORS

MCA Conference Room

Washington, D. C.

March 13, 1973

MEMBERS PRESENT:

T. R. Torkelson, CHAIRMAN	The Dow Chemical Company
Z. G. Bell, Jr.	PPG Industries, Inc.
W. D. Harris	UNIROYAL, Inc.
R. L. Maycock	Shell Chemical Company
W. E. McCormick	B. F. Goodrich Chemical Company
W. E. Rinehart	Ethyl Corporation
R. N. Wheeler, Jr.	Union Carbide Corporation

MCA STAFF PRESENT:

A. C. Clark	MCA
K. D. Johnson	MCA

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1. Minutes of the Meeting of February 20, 1973

With the addition of a notation recording the acceptance by the Coordinators of the PPG offer to supply monomer of indicated purity for project use, the subject minutes were otherwise approved as distributed.

2. Discussion of "Food and Bedding Study"

In response to an inquiry by Dr. Torkelson, acting pursuant to the recommendations made by the

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Coordinators at their January 30, 1973 meeting, the Industrial BIO-TEST Laboratories had offered (letter of Dr. Kepplinger dated 3/5/73) to expose fifty rats, in a separate chamber, with food and bedding present in the cages during exposures, for an incremental cost of \$10,000.

It was the consensus of the Coordinators that, if feasible, the exposure group for this experiment should be increased to 100 animals if this could be done without delaying the start of the experiment. Procedures for funding this expanded program are discussed in a subsequent section of these minutes. The cost increment for the extra fifty rats has been estimated to be \$5,000.

The Coordinators moved to accept the Industrial BIO-TEST proposal for the 50-rat experiment in the event funding for the larger experiment cannot be secured on a timely basis.

Dr. Torkelson reported that he had as yet been unable to obtain information on whether Dr. Viola had left food and bedding in the cages of the animals used in his initial study during the vinyl chloride exposures. He will continue to seek help from the European group in developing these data.

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3. Evaluation of Epidemiology Proposals

Proposals were received from Harvard University, Tabershaw-Cooper Associates, Inc., and the University of Michigan. In the judgment of the Coordinators, the proposal of Tabershaw-Cooper Associates was clearly superior to the other two in terms of cost, schedules, and technical approach. They voted to recommend it to the industry for support. Pertinent sections from that proposal are appended to these minutes.

4. Augmentation of Travel Funds for Bologna Conference

Upon the explanation by the Secretary that the \$2,500 authorization for repayment of funds advanced by their companies for travel by the Coordinators' delegation to the subject conference would not quite cover the claims

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submitted, it was voted to authorize MCA to disburse additional funds, not to exceed another \$100 (\$2,600 total) as necessary to meet these claims.

5. Requests to Industry for Additional Funds

On motion duly made and seconded, and carried by the unanimous vote of the group, they asked that representatives of the sponsors be called into session to consider the Coordinators' recommendations that the industry provide the supplemental funds for the expansion of the animal exposure program as discussed in section 2 of these minutes, and for the support of the epidemiology program described to the Tabershaw-Cooper Associates proposal.

(a) For the animal program - \$15,000, payable by the sponsors by appropriate adjustment of the third invoice for research costs. Ten thousand dollars of this would be used to reimburse the present contingency fund for the costs authorized by the Coordinators for the 50-rat food and bedding experiment. The remaining \$5,000 would be used to enlarge the exposure group to 100 rats.

(b) For the epidemiology study - \$92,345. This will include \$71,345 for the base contract, as quoted by Tabershaw-Cooper Associates in their proposal, plus \$21,000 as contingency funds that could be expended, as required, for travel, data acquisition, etc. should the study identify larger population groups for study than those specified in their proposal.

6. Financial Summary

The status of project funds, as of March 15, 1973, is summarized below:

Funds Authorized by Project Sponsors		\$165,000.00
Funds Committed		
Industrial BIO-TEST	\$149,000.00	
Laboratories Contract		
Industrial BIO-TEST	10,000.00	
Laboratories Contract Extension		
Travel Costs	2,507.35	
Cylinders & Fittings (estimated)	400.00	
	\$161,907.35	
Funds Uncommitted		3,092.65

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Funds Disbursed	
Travel Costs	\$ 2,507.35
Lee Cylinders	<u>278.52</u>
	\$ 2,785.87
Unexpended Funds	\$162,214.13

7. Future Meeting Schedule

The Coordinators voted to try to arrange a joint meeting with the Technical Task Group on Vinyl Chloride Research on April 4, 1973, for the purpose of presenting to them the proposals incorporated in these minutes. The members of the Task Group are to be asked to come to the meeting prepared, as far as possible, to express their management views on (1) the funding of the expansion of the animal test program, (2) the funding of an epidemiology study, and (3) its willingness to make records available to the epidemiology study if and when it is authorized.

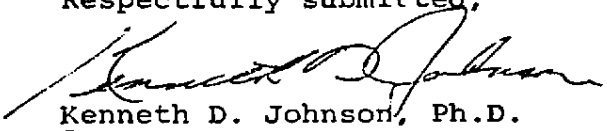
The Coordinators asked that Tabershaw-Cooper Associates be invited to have a representative attend a portion of the meeting for the purpose of answering questions about their proposed study.

If it should be necessary to schedule the meeting outside of Washington in order to find facilities adequate for the anticipated attendance (40 to 60 persons, to allow room for medical and legal advisers to the task group members), Pittsburgh, Cleveland, and Chicago were suggested as convenient sites.

If convenient, the delegation to visit the Industrial BIO-TEST Laboratories' Decatur laboratories will attempt to coordinate that trip with the subject meeting.

The Secretary was asked to prepare a suitable cover letter to these minutes, summarizing the Coordinators' proposals and suggesting a basis for funding of the epidemiology study that will permit invitation of the study with as little as 70% participation (based on total vinyl chloride and vinyl chloride monomer capacities) by the industry.

Respectfully submitted,


Kenneth D. Johnson, Ph.D.
Secretary

Minutes Subject to Approval
March 19, 1973
Attachment
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Manufacturing Chemists Association

Research Project

Epidemiology Study of Vinyl Chloride Monomer

<u>Contributors</u>	<u>Combined Production Capacity</u>	<u>Estimated¹ Minimum Cost</u>	<u>Estimated² Maximum Cost</u>
Air Products	160	\$ 1,260	\$ 1,630
Allied Chemical	440	3,460	4,480
Borden Chemical	390 ³	3,070	3,970
Conoco	830	6,530	8,450
Diamond Shamrock	325	2,555	3,310
Dow	1,200	9,440	12,220
Ethyl	450	3,540	4,580
Exxon	(150) ⁴	1,180	1,525
Firestone	240	1,890	2,445
Goodrich	1,600	12,585	16,290
Goodyear	200	1,575	2,035
Monsanto	150	1,180	1,525
Olin	150	1,180	1,525
PPG	900	7,080	9,165
Shell	800	6,295	8,145
Stauffer	150	1,180	1,525
Tenneco	300	2,360	3,055
Union Carbide	350	2,755	3,565
UNIROYAL	285	2,240	2,900
<i>BP Chemical</i>			
	<u>9,070</u>	<u>\$71,355</u>	<u>\$92,340</u>

- 1/ On assumption of full participation by all companies, and no expenditure of contingency funds
- 2/ On assumption of 70% participation, and expenditure of all contingency funds
- 3/ Includes Monochem capacity
- 4/ Non-producer; participation based on matching lowest capacity level among producer participants

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March 19, 1973

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EXCERPTS FROM

A PROPOSAL FOR A HEALTH STUDY OF VINYL CHLORIDE WORKERS

PRESENTED BY

TABERSHAW-COOPER ASSOCIATES, INC.

March 6, 1973

TCA, Inc., believes that an essential step in appraising the health implications of working in vinyl chloride production is to know the cause-specific mortality pattern. We therefore propose to conduct an epidemiological study of mortality in vinyl chloride workers. The study would start with existing records and would follow workers to determine their current status. The objectives would be:

- (1) to compare the mortality of individuals who have worked in vinyl chloride plants with that of the general population, corrected for area, age and sex;
- (2) to compare mortality patterns within the population of vinyl chloride workers, based upon estimated occupational exposure; and
- (3) to compare mortality among vinyl chloride workers with the mortality of other occupational groups which TCA, Inc. has studied.

Study design

Although a more detailed study plan will be developed as actual plant populations and processes are defined, the following outline covers the essential elements.

In each plant, the study population will consist of all workers who were employed for a least one year, beginning at the earliest date for which records are available, and ending on December 31, 1972. It has been estimated that this group will consist of approximately 5,000 current employees. Our experience indicates that retirements, terminations and deaths before December 1972 will increase the total study population to about 7,500.

For each person, age, date of employment, nature and duration of employment, and ethnic origin (if possible) will be determined. For those who have died, copies of the death certificates will be obtained, either from plant records or from the public health authorities. These will be classified by cause of death, using the same rules as are used in national death statistics.

Those who left employment will be traced to establish their present status, using post office notification, drivers license records, and other methods which in the past have enabled us to trace over 96 percent of our study population.

In addition, as much information as possible on occupational exposure will be obtained from plant management. At a minimum, we expect to be able to classify job positions as involving either high, medium or low exposure to vinyl chloride. Both personal and plant data will be kept in the strictest confidence, and no individual worker or plant will be identified by name in any analysis or communication about the data.

Data collection

A TCA, Inc. team will photograph all relevant personnel records at each plant. Involvement of plant personnel during the course of the study will be minimal, unless desired by local management. The data collection team will require a contact person at each plant through whom arrangements can be made and information channeled to local management. The only physical equipment required at the plant is a worktable with a nearby electrical outlet. Our practice is to record data for active employees first and return the records to the files immediately, and then to examine the records for retirees, terminations and deceased employees.

Data analysis

Depending on the actual population size and the duration of follow-up activities, it appears probable that about 800 to 1,000 deaths will occur in the study group.

The basic mortality analysis will begin with a calculation of the number of person years of observation contributed by the study group at each year of age and at each point in time during the study period, using a computer program prepared specifically for this purpose. These data will be used together with the observed deaths at each age and each point in time to calculate mortality rates, which will be compared with the mortality to be expected in the comparable U. S. population, as obtained from national statistics. Techniques of this kind are well developed and have been used for some time in chronic disease studies. (See California Tumor Registry, Cancer Registration and Survival in California, California State Department of Public Health, 1963.)

The above analysis will be repeated for specific causes of death, paying particular attention to competing risks, or interaction among different causes of death.

In addition, analysis of general and cause-specific mortality will be repeated for subgroups of the study population identified as having high, medium and low exposure. The resulting mortality figures will be interpreted not only in light of their statistical significance, but for their relevance to known and suspected mechanisms of action of vinyl chloride, and for their implications with respect to future studies of special areas and groups.

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The validity of the conclusions reached from a study of this kind depend crucially on the competence with which data are collected and processed, and the appropriateness of the comparative mortality analysis. TCA, Inc. is uniquely qualified in both areas. The procedures and analysis proposed here have been tested successfully in other industries and as a result, TCA, Inc., has a data bank of mortality profiles, which provide a realistic standard against which to compare vinyl chloride workers, and which furnish a second benchmark in addition to the general population statistics. TCA, Inc.'s resources in occupational medicine and industrial hygiene further guarantee that the results of the mortality analysis will be evaluated in relation to the current state of knowledge in these fields.

Timetable

Exhibit I outlines the basic timetable of the major activities involved in the mortality study. The proposed study will require eight (8) months for completion. Once the plants are identified and approval is received, the records collection from the plants will require approximately two months. Processing of the films and classification of the records will require an additional month. At the same time, follow-up procedures will be initiated. The search process for the status of unknown workers and the collection of death certificates for those who have died are the key follow-up activities and are the most time consuming in the mortality study. These activities are also the ones most beyond our immediate control and it is for this reason that the study can not be successfully completed in a shorter time span. Every effort will be made to achieve a follow-up level of 95% or more and if this is accomplished earlier than anticipated, TCA, Inc. will strive to supply the Manufacturing Chemists Association with a written report in less than eight months. Progress reports will be made on a mutually agreeable schedule through the course of the contract.

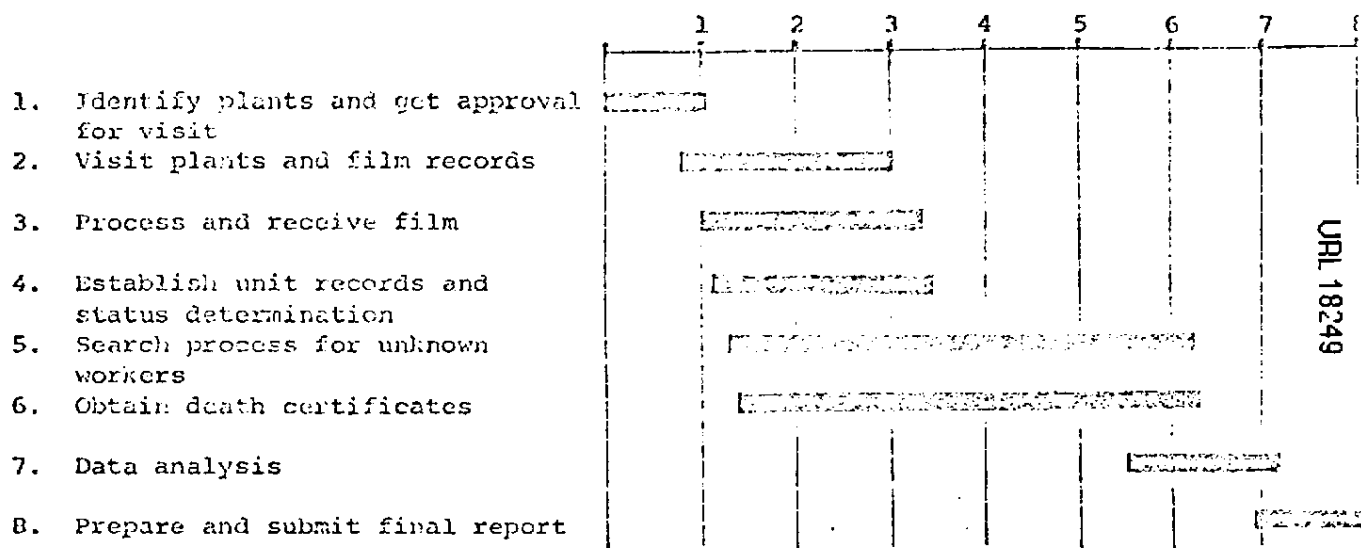
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EXHIBIT I

MORTALITY STUDY FLOW CHART

MAJOR ACTIVITIES

MONTH



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