

To: The US Food and Drug Administration
Rockville, Maryland

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A PETITION
TO REQUIRE MORE INFORMATION
ON RESTAURANT MENUS
WHERE METHYLCELLULOSE
OR CARRAGEENIN
ARE INCORPORATED IN THE FOODS

by Ruth Armstrong
302 South Street
Jonesville, MI 49250
(517) 849-9668

OIP-0034

CP 1
Ruth A. Armstrong

A PETITION

I. Ruth Armstrong, of 302 South Street, Jonesville, Michigan, 49250, fervently request that the presence of METHYLCELLULOSE and CARRAGEENIN in restaurant foods be required to be noted on menus. This could be done as simply as using an asterisk beside those dishes and a footnote on the page. This is especially important where these substances are used in meats or meat dishes, cheeses, egg dishes such as omelettes and other main protein foods.

I also request that the names METHYLCELLULOSE and CARRAGEENIN be definitive and required.

The reason:

Although these extender/stabilizer items are now generally accepted by the FDA as suitable to be used in foodstuffs, there are some of us for whom ingestion causes dreadful embarrassment in as little as two or three hours (They go right through, uncontrollably and suddenly) and over long term can cause serious nutritional problems. (see ff.)

Ruth A. Armstrong

THE BACKGROUND:

For something over two years I have encountered a "restaurant disease" now and then which is not food poisoning but is dreadfully embarrassing. The food goes right on through, inexorably, uncontainably, as a peculiarly gelatinous mass, not at all like ordinary diarrhea, in two to four hours. Needless to say this is highly distressing and can ruin a planned outing completely. My dining out, when I dare, is usually confined to steak, undressed salad and plain green vegetable.

It was not until I read an article in the Wall Street Journal last year ("Slime Sublime" 11/15/99) about the product "Methocel" (methylcellulose) that I had a clue to wonder about. Methylcellulose could either be my culprit or a way to make raised breads without gluten. You see, I have had to be on a gluten-free diet for half my life now, so all wheat and most other grain products are not for me at all.

Accordingly, I called Dow Chemical, makers of Methocel, in Midland, Michigan for literature and a sample of Methocel to test on my interior workings. They sent me a very informative booklet (Methocel Cellulose Fibers Technical Handbook, June 1997, Form 192-0162-6976W), but no, an individual could not obtain a sample. The booklet informed me that methylcellulose products "pass through the intestinal tract virtually unchanged" (p 15) (indeed a statement of my problem), that they "possess a basic carbohydrate structure" and "resemble naturally occurring seaweed gums in many of their chemical, physical and functional properties" (p. 29) Oh oh! I had already learned, long after the distressing event, (Wall Street Journal 2/5/96) that McDonald's had "replaced some of the fat [in their McLean burger] with a seaweed derivative" The one McLeanburger I once ate had been a disaster, but the solution was simple then: If caught at McD's, eat only the McRegular burgers.

I talked with Dow regarding where Methocel was currently used, and got an enthusiastic list much like the one in the Wall Street Journal article. (which see; enclosed). I conferred with Aldrich Chemical, whom Dow said might send me a sample, with similar results. And no, no sample if I am not a "company".

I began to read ALL the fine print on grocery labels. My artist daughter, who uses methylcellulose in some of her paper-making experiments, pointed out that, in powder form, methylcellulose is very light in weight, so can be listed down near the bottom of the ingredients list. BUT half a teaspoonful in water will make a whole glassful of jelled "glop". I "cured" my problem easily by taking my fine-print glasses to the grocery store.

John H. Carmichael

BUT..eating out in restaurants has become more and more a game of dining roulette. Eliminating cheeses and dressings and gravies is easy, but ground meats, soups, spiced apples and vegetable sauces, to name a few items, may also be "enhanced" by either methylcellulose or carrageenin, my glutinous "enemies". I have learned to avoid the class of chain restaurants called "family" altogether. I was clued in on the prepared food (ie: frozen entree) thing when a friend asked me "How could an omelette be hot on the outside and stone cold on the inside?" A trip to the frozen food aisle confirmed my suspicions. Yes, there are frozen omelettes to be bought, AND they contain methylcellulose! Another "safe" food now on the jeopardy list!

Meanwhile, as I had to explain why I had to decline or specify certain restaurants for any eatings-out with friends, I began to get more and more "Humn, do you suppose that's what happened to my husband (sister, brother, aunt etc.) on our vacation last month?". I even found myself in such a discussion with one of our leading citizens at a big reception! Hardly suitable as a topic, but he anxiously requested information.

I can (so far anyhow) travel by AMTRAK, and have enjoyed my trips in good order. I have told their customer service about the problem, when I called to be sure eggs went aboard in egg shells before a two day long journey. (They do) I can order perfectly well from their regular menu quite easily. Not so with air line meals. I quit flying three years ago because of them. And the chemical company I consulted told me that yes indeed, methylcellulose is used in airline foods. So that was it!

Last month, I was astonished when my daughter called to ask me what she could have eaten to cause, yes, the sudden gelatinous emission. We traced it to the new container of parmesan cheese she had just opened and poured generously on the spaghetti she had prepared at home. She does not have gluten intolerance, but now does avoid getting "the problem" by avoiding methylcellulose. So it is not just people with gluten intolerance who can be affected.

But for those of us in this world who are already on a strict gluten free diet and are sensitive to methylcellulose and/or carrageenin, it does present a health as well as a humiliation problem.

Patricia Armstrong

THE HEALTH PROBLEM POTENTIAL

For people like me, who eat to keep weight ON and blood sugar up, and who must avoid almost the whole class of foods known as starches or breadstuffs, the presence of methylcellulose or carageenan in the remaining allowable foods is a definite threat to adequate nutrition.

For some people, to whom weight-keeping is not a concern, there still remains the embarrassment problem. Ever try to deal with such a mess in a stall and basin-row ladies room? And if I had been wearing a dress or had plans and tickets for the theatre after the restaurant....Ugh! Mortification and money too!

The amount of actual food that can be replaced by cellulose in any given recipe is not really the amount of dry cellulose powder by weight, as with, say, baking powder. It is the amount of moisture-reconstituted "glop" incorporated, because that much of the total weight is replaced by a non-nutrient substance. What does this do for people who can eat cellulose, but think they are consuming an amount of nutritious food, when actually a good bit of it is now "inert" gel?

The cheese problem is a good bad example for me. Over two years ago, I, who am also lactose intolerant, assumed wrongly that finally my intolerance had spread to cheese. Cheese is usually tolerated because the lactose is replaced by lactase.. in real cheese that is. What I had not noted was that somewhere along the line many cheese companies had quietly slipped methylcellulose into their cheeses, and I had bought the usual which was no longer the same usual. Now, having no good source of calcium, I bought calcium pills. About the time I learned that there was methylcellulose in some cheeses, I also began to have cramping three hours after calcium. You guessed it: comparing labels of an old jar I had used to store small nails, I found "the enemy" was there too. Meanwhile, back to reading the cheese labels, I found out that I CAN TOO EAT CHEESE! That's not funny. For two years I was not eating a perfectly available food because I hadn't even suspected that "cheese" was not a generic term for anything but cheese. Others used to be called "process" or "cheese food".

I need all the valuable nutrients I can tolerate. I feel deceived. And of course I wouldn't think of ordering a cheeseburger anywhere anymore. When I asked Kraft for a list of their methylcellulose-containing foods, they sent a list of gluten-free products and said they could not furnish the information I had asked for.

John H. Armstrong

THE PROBABLE SCOPE OF THE PROBLEM

I am giving you what is often scornfully dismissed as "anecdotal evidence" Well, so is history, if you think about it. I am given anecdotal evidence, even by total strangers, as I was several times on my most recent trip to New York and Chicago, when people looked at my plate on the diner. (The usual query is "Why do you diet when you are already thin?") And then they tell me their troubles and tribulations.

In pondering my many "interviews", I note that the methylcellulose problem is probably not confined to people like me with gluten/lactose intolerance. What I suspect is that different people have different LEVELS of tolerance for cellulose products. Thus, when someone eats, say a main dish with methylcellulose in the gravy, a salad with it in the dressing, a muffin containing methylcellulose, and apple pie with it in the filling with ice cream also containing a cellulose gum, they get a sudden "surprise". Yet, the next time they eat the same meal somewhere else, it may not contain so much or maybe none at all. So they assume they had "food poisoning" of some sort, particularly if they happen to be in transit and may never dine there again. The outcome may well be linked to just how many of the offending adulterants are consumed at one sitting.

Unlike regular food poisonings or flu bugs, this kind of episode is gelatinous, not runny, sudden and over in half an hour, leaving no pain or malaise, no nausea or fever. It "just happens!" And thus it usually does not merit a doctor visit, but only a "must have been something I ate". And then few people are as prone to discuss that part of their digestive adventures as they are to mention other things.

Gene H. Armstrong

A QUESTION

Since my present sensitivity to wheat was exacerbated by continuing to consume glutens in breadstuffs for so many puzzled years, before the cause and effect of it became acutely evident, I wonder what very long term consumption of methylcellulose and carageenans may have on our children's digestive systems in the future. Almost no one thought "good old bread" could be harmful when I was a child, yet, for a few of us, it sure is.

For the gluten intolerant, consumption of wheat and most other grains is known to very gradually destroy the villi in the intestine, so that nutrients in all foods are not absorbed properly. Once damaged, the only and life-saving "cure" is a strict adherence to a high protein, low fat, almost no starch diet, with plenty of green and yellow vegetables and some fruits, but not in excess. And wheat in any form is absolutely forbidden. This includes wheat starch and wheat gluten expanders.

Is it known for certain that the passing-through of so much "inert" material might not have a similar effect on susceptible people? I don't know, but I would not wish on any child now living a future that forevermore requires such extreme will-power at the plate. (Of course when the motivation to be well or miserably dying of malnutrition is there, one cheerfully gives thanks for the solution and goes on with better things to get done.)

Rich A. Armstrong

HELP!

I'm not asking that methylcellulose or carrageenin be banned. I just want it to be required that the presences of these items be clearly indicated on menus in restaurants and also on trains and on planes (where food free of these should be available).

I believe that it is also important that any presently permissible euphemisms for these substances (see Dow booklet p. 10) such as "modified vegetable gum" or "carbohydrate gum" be banned in favor of the real names of "methylcellulose" and "carrageenin" any place they are used in consumables.

For people on medically indicated diets, we need to know what food values we are consuming, exactly what we are eating. For the small percentage of the population with gluten intolerance, the introduction of wood and seaweed derived "unfood" carbohydrates into food which are normally classed as proteins can be a serious threat to well being.

Please! I haven't a drop of termite blood in my heritage. And I would like to go on leading a normal busy life, which has always included both travel and some dining out.

Quita H. Armstrong

ON SOURCES OF INFORMATION

The Dow technical bulletin from which I enclose copies of pertinent pages, and the two Wall Street Journal Articles also enclosed are the only pertinent print information I have. But I believe they do express the problem, both pro and con, and define it for the purpose.

I did go to the internet and found only three articles that even might help on methylcellulose listed, and all either "not available" or "blocked", whatever that means. There was more on carrageenin, but all I learned was that there is a new large molecule derivative with superior gelling properties, which may be why it is now on my "no" list, as it was formerly in things like liquid dressings that I formerly could eat, tho perhaps in smaller quantities too. The rest was recipes or uses such as ice cream and gel desserts, which are not in my world anyway.

I originally wrote to the Detroit office of the FDA on 9/20/00 and received a referral from there from Evelyn DeNike, public affairs Specialist to Jeanni Erter-Prego in Washington on 9/28/00. Jeannine Erter-Prego wrote me 11/15/2000, enclosing useful material on labelling and food additives (most of which I do know already from need to do so) and suggesting that if I feel the problem extends beyond myself, that I petition the FDA formally for changes desired.

This, therefore, is the result of all that, and of the continuing experiences and anecdotes of similar ones that I have collected up until now. If you would like any further elaboration or detail, I will be glad to talk with you. I am quite sure I am the proverbial canary in the coal mine, when methylcellulose and carrageenan are on the menu.

I hope you will consider the need to know where they are, when dining out as well as at the grocery store, most seriously. It would put my world back together and help others too!

Sincerely,

Ruth A. Armstrong 1/08/01

Ruth Armstrong
(517) 849-9668
no internet or fax

From: Ruth Armstrong, 302 South Street, Jonesville, MI 49250

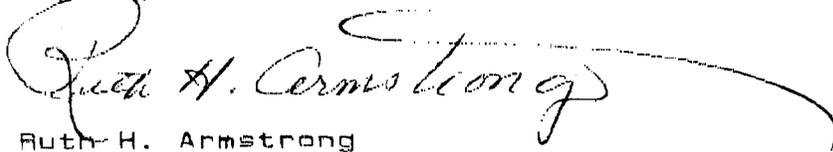
Addenda to my petition to require more information on
Restaurant menus re: methyl cellulose or carrageenin

Environmental Impact Statement:

I make claim for categorical exclusion: under general 25.30
and also under food additive 25.32 regulations.

The undersigned certifies that, to the best knowlege and be-
lief of the undersigned, this petition included all informa-
tion and the views on which this petition relies, and that it
includes representative data and information known to the
petitioner which are unfavorable to the petition.

Signed,



Ruth H. Armstrong

1/19/ 2001

Fax to:

Attn: Mr. Lyle Jaffe

Dockets Management Branch
Food and Drug Administration
Room 1061
5630 Fishers Lane
Rockville, MD 20852

Fax # 301-827-6870

METHOCEL Cellulose Ethers Technical Handbook



Properties of METHOCEL in Powder Form

METHOCEL cellulose ether products are white to slightly off-white powders which are essentially odorless and tasteless. The apparent density of the powders ranges from 0.25 to 0.70 g/cm³ (250-700 kg/m³).

Moisture Sorption

METHOCEL products sealed in their original shipping containers absorb little to no atmospheric moisture. Once a container is opened, however, there is pick-up of moisture from the air. When "exposed" METHOCEL cellulose ether is weighed, a portion of the total weight, therefore, may be water. Such weight must be corrected for moisture content to ensure that the proper weight of METHOCEL is used to give the desired viscosity.

To minimize moisture pick-up, opened bags should be tightly resealed. The moisture-sorption rate of METHOCEL K brand products is somewhat greater than for METHOCEL A brand products. However, the moisture-sorption rates are about the same within a single chemical type. Typical moisture sorption is shown in Figure 4.

Resistance to Microorganisms

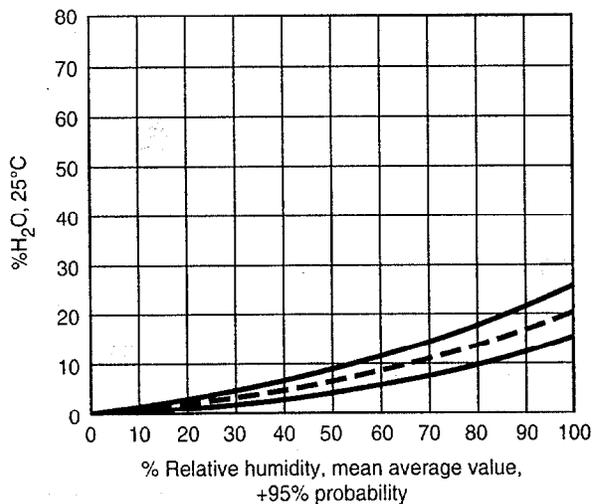
An important property of METHOCEL cellulose ether products is their high resistance to attack by microorganisms. METHOCEL products with higher degrees of substitution are especially resistant to enzymes. The fact that virtually all METHOCEL methylcellulose and METHOCEL hydroxypropyl methylcellulose ethers pass through the intestinal tract essentially unchanged attests to the stability of these products to a wide range of biochemical and enzymatic systems. Shelf-life in paints and other latex-based coatings, and stability of

solutions and other products containing METHOCEL cellulose ether, can be greatly increased by this resistance to microorganisms.

As the cellulose is modified by substitution with various radicals, such as alkyl and hydroxyalkyl groups, resistance to microbial attack increases. Several researchers have reported that the degree of substitution (D.S.) of water-soluble cellulose derivatives was a primary factor, with a threshold D.S. value of 1.0 required for protection.[†]

Because METHOCEL cellulose ether products have excellent uniformity of substitution, with a D.S. much higher than 1.0, they possess excellent resistance to microbial attack.

Figure 4: Equilibrium Moisture Content vs Percent Relative Humidity, 25°C



[†]H.S. Levinson and E.T. Reese, *J. Gen. Physiol.* 33, No. 601 (1950).
E.T. Reese, R.G.H. Siu, and H.G. Levinson, *J. Bacteriology* 59, No. 485 (1950).
E.T. Reese, *Ind. Eng. Chem.* 49, No. 104 (1957).

Regulated Uses

Chemical Inventory

METHOCEL products, methylcellulose and hydroxypropyl methylcellulose, comply with all applicable rules and orders under Toxic Substances Control Act PL94-469. The Chemical Abstracts Services Registry No. (CAS) is 9004-67-5 for methylcellulose and 9904-65-3 for hydroxypropyl methylcellulose.

METHOCEL products have also been reported for the following inventories:

European Inventory of Existing Chemical Substances (EINECS)

Australia Inventory of Chemical Substances (AICS)

Ministry of International Trade and Industry Inventory (MITI, the Japanese inventory)

Canadian Domestic Substances List (DSL)

Many countries are in the midst of creating new chemical inventories. Please contact your Dow Representative for the status of METHOCEL products for countries not listed above.

Pharmaceuticals

Premium grades of METHOCEL A, METHOCEL E, METHOCEL F, and METHOCEL K products are used for pharmaceutical and topical applications. Premium grades of METHOCEL products meet the specifications of the United States Pharmacopeia (USP XXIII), European Pharmacopeia (EP) and Japanese Pharmacopeia (JP) and are listed as methylcellulose and hydroxypropyl methylcellulose. In addition, methylcellulose (METHOCEL A products) is Generally Recognized As Safe (GRAS) by the Food and Drug Administration.

To support new drug applications in the United States, masters files for these products are on file at the Bureau of Drugs of the Food and Drug Administration. Permission to open the master file can be obtained by writing:

The Dow Chemical Company
Product Safety and Compliance
2030 Dow Center
Midland, MI 48674

A bibliography of pharmaceutical and medical references is available from:

The Dow Chemical Company
Chemicals and Performance
Products Department
2020 Dow Center
Midland, MI 48674

Foods

METHOCEL Premium cellulose ethers have long been used in the food industry. Premium grade METHOCEL products are approved within the Food Chemicals Codex and are listed as methylcellulose and hydroxypropyl methylcellulose.

In the U.S., methylcellulose is approved as a multiple purpose GRAS food substance according to 21CFR 182.1480. It is also allowed for use in meat products according to 9CFR 318.7 and 9CFR 381.147. Hydroxypropyl methylcellulose is approved for direct food use by the FDA under 21CFR 172.874. It is also approved by the USDA as an emulsifying agent, binder, thickener, and stabilizer and is listed in the Standards and Labeling Policy Book published by the USDA. Because they are approved for direct food use, METHOCEL products can also be used as packaging components and in indirect food applications.

In the European Union, Premium METHOCEL products are approved for use within the European Directive 95/2/EC. Hydroxypropyl methylcellulose and methylcellulose are included in Annex I of this Directive.

When labeling these food ingredients, one can use either their proper chemical names or their common names. Therefore, one could use "methylcellulose" or "modified vegetable gum" for METHOCEL A products. For METHOCEL E, F, or K products, one could use "hydroxypropyl methylcellulose" or "carbohydrate gum." METHOCEL products are also certified as kosher for year-round and Passover use by the Union of Orthodox Jewish Congregations of America.

Pesticide Use

Under 40CFR 180.1001, certain inert ingredients used in pesticide formulations are exempt from the requirements of a tolerance. Methylcellulose and hydroxypropyl methylcellulose may be used in formulations applied to growing crops or raw agricultural commodities after harvest. Both Standard and Premium grade METHOCEL cellulose ether products are appropriate.

Handling Considerations

Material Safety Data Sheets/Safety Data Sheets for METHOCEL products are available from The Dow Chemical Company to help you further satisfy your own handling, disposal, and safety needs and those that may be required by government regulations. Such information should be requested prior to handling or use. The following comments are general and are not a substitute for the detailed safety information found in the Material Safety Data Sheet/Safety Data Sheet.

Health

METHOCEL cellulose ether products resemble the naturally occurring plant and seaweed gums in many of their chemical, physical, and functional properties. All these materials possess a basic carbohydrate structure.

METHOCEL products have had extensive evaluation and testing in both acute and long-term feeding studies in a number of species, including humans. Their many years of use in a wide variety of food items attests to the safety of METHOCEL Premium products.

Although dust from METHOCEL cellulose ether products could conceivably cause temporary mechanical irritation to the skin and eyes under extreme conditions and may be considered a nuisance dust if inhaled, the products are considered to present no significant health hazard in handling. Please review the handling precautions within the Material Safety Data Sheet/Safety Data Sheet for more information.

Flammability

Cellulose ether products are organic polymers that will burn when exposed to heat and a sufficient oxygen supply. Fires can be extinguished by conventional means, avoiding any raising

of dust by strong water jets. Dow recommends the use of water spray, carbon dioxide, or powder extinguishers.

Storage

Caution: A fine dust of this material is capable of forming an explosive mixture with air. Powder samples should not be exposed to temperatures above 135 to 145°C. Samples may decompose and lead to a possible dust explosion. As in storage of any dusts or fine powders, good housekeeping is required to prevent dusts in air from reaching possibly explosive levels. When handling in large quantities or in bulk, the general precautions outlined in NFPA 63, "Prevention of Dust Explosions in Industrial Plants," and in NFPA bulletins 68, 69, and 654 are recommended.

With METHOCEL cellulose ether products with particle sizes of 74 μm or less (finer than 200 mesh), critical levels are reached at concentrations of 28 g/m^3 (0.03 oz/ft^3). The minimum ignition energy required to cause a dust explosion is 0.030 joules. Static from a human body has about 0.025 joules. This is normally not enough energy to ignite the powder.

As with any organic chemical material, METHOCEL cellulose ethers should not be stored next to peroxides or other oxidizing agents.

Accidental Spills and Housekeeping

Solutions of METHOCEL cellulose ethers are slippery. To prevent employee falls and injury, floor spills of dry powder should be thoroughly vacuumed or swept up. Any slight residual product on the walls or floor can then be flushed with water into a sewer. If the spill is a viscous solution, it should be further diluted with cold water before disposal. Likewise,

accumulation of dust should be avoided to control this hazard.

Disposal

Despite the very slow rate of biodegradation, cellulose ether products should not present any hazard in the waste/soil compartment. Their behavior is similar to wheat flour or sawdust. Although Dow studies using standard procedures showed no 5-day, 10-day, or 20-day BOD values, activated sludge studies with (14°C) methylcellulose showed that methylcellulose was 96% degraded or otherwise removed from solution in 20 days. Thus, METHOCEL cellulose ethers should present no ecological hazard to aquatic life.

Because METHOCEL cellulose ether products and their aqueous solutions present no significant ecological problems, they can be disposed of by industrial incineration or in an approved landfill, providing regulations are observed. Incineration should be done under carefully controlled conditions to avoid the possibility of a dust explosion. Customers are advised to review their local, state, provincial or national regulations governing the disposal of waste materials to determine appropriate means of disposal in their area.

Customer Notice

Dow encourages its customers to review their applications of Dow products from the standpoint of human health and environmental quality. To help ensure that Dow products are not used in ways for which they are not intended or tested, Dow personnel will assist customers in dealing with ecological and product safety considerations. Your Dow sales representative can arrange proper contacts.

IG & MEDIA

McDonald's Decides To Trim the Low Fat In Menu Shake-Up

* * *

**McLean Burger Fails to Cut
The Mustard for Diners
At Fast-Food Restaurants**

By RICHARD GIBSON

Staff Reporter of THE WALL STREET JOURNAL
Say so long to the McLean Deluxe.

The reduced-fat hamburger, that McDonald's Corp. rolled out five years ago to quell those who said too much fast food was fat food, is being discontinued. It will be phased out in coming weeks, as inventories of the sandwich's patties run out.

Although it was touted as nutritious and with 10 grams had half the fat of a McDonald's Quarter Pounder hamburger, the McLean never caught on with customers. Some of the fat was replaced with a seaweed derivative, giving the burger a different taste. It also cost more than other sandwiches, and McDonald's seldom promoted it.

"I sell maybe one a day," a McDonald's franchisee in Northern California said over the weekend.

Indeed, the McLean's unpopularity recently led to an embarrassing episode. An ABC "Primetime Live" investigation discovered that because of slim sales, some restaurants were making the sandwich with regular, higher-fat beef.

When executives at Oak Brook, Ill.-based McDonald's learned of the practice, they were furious. "It's just unconscionable . . . an awful black mark on our organization," McDonald's U.S. president Edward H. Rensi fumed in a video message to franchisees.

Mr. Rensi added that, while he personally would prefer to drop the McLean, "it does so much good for us with the nutritional activists . . . so we're going to stay with the McLean for the near term."

But bottom-line realities apparently flipped that decision.

"We are doing some streamlining in the menu," a spokesman for the company said, confirming the McLean's demise. "We're focusing on menu items that are most popular and selling well." After the sandwich's departure, the burger with the lowest fat content will be the regular hamburger, with nine grams. For those

seeking something leaner, McDonald's offers a grilled chicken sandwich with four grams of fat.

McDonald's also plans to eliminate two of four salads on its menu — the chef and side salads. Restaurants will continue to serve garden and chicken salads. Moreover, customers at the nation's largest fast-food chain are likely to see fewer special shakes and other promotional items that appear only for a short time.

The menu shake-up is partly in recogni-

tion of customer preferences, but is also a prelude to the arrival of a hamburger called the Arch Deluxe this spring. Internally, the company is calling that sandwich a potential "flagship" item. It is intended to compete with rivals' burgers featuring bacon, lettuce and tomato.

McDonald's doesn't intend to draw attention to the McLean's passing, but customers will be hearing a lot about this month's sandwich special: A double cheeseburger.

Why Dow Chemical Finds Slime

**From Monster Slobber to Soup,
Some Goopy Stuff Named
Methocel Has Many Uses**

By SUSAN WARREN
Staff Reporter of THE WALL STREET JOURNAL

MIDLAND, MICH.—Don Coffey is serious about slime.

Recently, the 46-year-old Dow Chemical Co. scientist mixed up a batch of his newest variety—the kind of slippery, goopy stuff usually found in buckets at Halloween—and plopped a hockey-puck-size glob down on a plate. As it lay jiggling, Mr. Coffey plunged his face in the goo and snarfed it down.

"Have you ever eaten Jell-O without a spoon?" he asks.

For 15 years, Dr. Coffey has devoted his career to slime, convincing food companies that Dow's concoction should be an indispensable part of their recipes. From a handful of products originally, Dow has managed to slip slime into more than 400 foods, from frozen pot pies to whipped toppings, as well as pills, paints, shampoos and special effects for movies.

These days at Dow, slime rocks. Chief Executive William Stavropoulos boasts that the stuff, marketed under the name Methocel, is the premier product in its specialty chemicals and plastics portfolio.

But slime wasn't always so cool. Twice since Methocel's birth 60 years ago, Dow was ready to kill the product. Even its creation is said to have been a laboratory mistake.

In the 1930s, scientists at Dow and elsewhere were experimenting with wood to create a more pliable material. By grinding wood into a pulp and then washing it with chemicals to break it down, they were able to create ethyl cellulose, a product used to make the first plastic wrap. It was handy for things like canteen linings during World War II.

But as Dow lore has it, someone at the plant had one day, tacking an extra carbon atom onto the molecule. The result: an oozing goo called methyl cellulose, an obscure substance previously discovered in Europe. While scientists were excited by the find, Dow managers considered the slop as a disgusting disaster. Methocel was quickly sidelined when cheaper, more versatile petrochemical-based plastics came on the scene.

The product gradually found a home as a filler for tile putty and drywall mud. But it was lousy, and in the mid-1980s, Dow stopped selling. With no takers, though, it started trying to save it, slashing prices and looking for ways to enter the market.

Recently minted Ph.D. in food science, Dr. Coffey recruited to cook up new recipes for food. To the youthful scientist, what was about slime was that, chemically speaking, it is "bass-ackwards." Most plastics contract when heated. But Methocel had a key layer that breaks free when the



Dr. Don Coffey and the versatile gunk now used in some 400 food products

molecules are heated; the molecules bond together to form a gel with a consistency like cooked egg whites. As it cools, the stuff thins out again into an oozing slime.

Dr. Coffey saw immediately that the tasteless, odorless and calorie-free ingredient, already used in a few foods, could be expanded to thicken soups, sauces and gravies. Added to foods, the stuff has a smooth, buttery texture, compared with the sometimes pasty feel of starch-based thickeners. Though chemicals are used in the manufacturing process, the end product is all-natural wood cellulose.

After trying out recipes in his lab, Dr. Coffey hit the road to convince customers. But food companies were perfectly happy with the corn or potato starches they had been using for 100 years. Besides, food-grade Methocel costs \$5 a pound, compared with about 50 cents a pound for starches, though only one-tenth as much Methocel will do the same job.

Dr. Coffey met with a wall of skepticism. On one winter sales call to a Midwestern food company, the customer didn't believe that Methocel would do everything he said it would. He and a salesman were hustled out so

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quickly, he says, "I'm surprised we didn't end up head-first in a snow bank."

Gradually, some food companies began trying the goo for items like soups and puddings. But most sales still went to industrial and construction product makers. Dow, a chemicals giant specializing in basic petrochemicals, wasn't sure what to do with its slimy throwback to the pre-plastic era.

In the early 1990s, Methocel found itself again on the chopping block. "We still debated whether it had been as successful as it could be," says

Michael Parker, an executive vice president then charged with taking a hard look at Dow's less-stellar businesses.

Dr. Coffey, an energetic man with a fondness for food-themed neckties, had a plan. Methocel could be a big player in Dow's expanding specialty businesses, he figured—if only he had a team of food scientists. To win over the food industry, "you need to be able to help them figure out why the cheese sauce is lumpy," he says.

His passionate pitch made superiors worry that there wasn't enough substance to back it up. "The tendency was not to take him seriously," says Gerald Doyle, now the global business director for Methocel.

But the day before Halloween in 1993, Mr. Parker gave slime a reprieve. Dr. Coffey immediately hired three Ph.D.s.

Today, the Methocel division employs 300 people, including 14 food scientists. It boasts double-digit sales growth and produces more than 200 different products. Methocel has been used as monster slobber in "Star Wars" movies and took the title role in the remake of "The Blob." Museums use it as a kind of mud mask to clean artwork, and pharmaceutical companies use it for time-release medicines and coated capsules.

As director of the Methocel food business, Dr. Coffey believes slime's brightest future is on the grocery shelf—though many customers aren't eager to boast about it. Some companies worry about revealing a chemical component in their food products (no matter its natural origins and safe reputation). Others companies want to keep a key ingredient secret. Though

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Soup to Slobber, Dow Chemical's Goo Finds Many Uses

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Methocel must be listed on the ingredients label, often as methylcellulose, it can also be disguised simply as "vegetable gums."

Incognito or not, Methocel makes cheese cheesier, gravy creamier and fillings fruitier, says one frozen-food manufacturer who declined to be named. Without it, says a company representative, "you'd have something that was either too soft or too hard or too mushy."

And more food uses keep coming. In his lab near Dow headquarters here, Dr. Coffey, sporting a bacon-and-egg necktie, hovers around lab manager Linda Steinke as she coats pepperoni bits with Methocel powder. Makers of frozen pizza snacks have had problems with oozing grease. As pepperoni heats up in the oven, the Methocel absorbs the grease as it gels.

In another corner of the lab, similar work is being done with pot pies for a manufacturer who wants to reduce "boilover."

The newest Methocel product, dubbed **Supergel**, can be a substitute for egg whites, working as a sort of food glue to bind vegetable patties together. That appeals to vegans who shun animal proteins. "This is the youngest 60-year-old product out there," Dr. Coffey insists.

It may also be one of Dow's most fun. By filling a surgical glove with Methocel, tinting it greenish-yellow and boiling the mess, lab workers can create a ghastly, gelled appendage. New recruits in the lab have been known to find one sitting in their chairs, slowly melting.

One of the favorite stops on Dow visitor tours is "Slime Time," where school kids can add a pinch of Methocel powder to water to make their own goo. And squeezing it through fingers has its own distinct charm. On some Halloweens, Dr. Coffey buries quarters in a bucket of the stuff and lets kids dig for them.

"Then you can rub it in your hair and make your hair stand up," he says gleefully.

Through it all, Dr. Coffey never stops selling. At a recent presentation to customer service employees, he made his overhead transparencies out of thin layers of Methocel. At the end of the talk, he challenged Mr. Doyle, the global business director, to eat one of the crinkly, ink-stained sheets.

Mr. Doyle politely declined. So Dr. Coffey wolfed it down himself. "You only have one chance to hammer home a few points," he says. "And one of them is that it's OK to eat this. And as a matter of fact, you're supposed to eat this."

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