

**USE OF ADVISORY COMMITTEES BY THE
FOOD AND DRUG ADMINISTRATION
(PART 3)**

**HEARINGS
BEFORE A
SUBCOMMITTEE OF THE
COMMITTEE ON
GOVERNMENT OPERATIONS
HOUSE OF REPRESENTATIVES
NINETY-FOURTH CONGRESS
FIRST SESSION**

OCTOBER 31, 1975

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(III)

USE OF ADVISORY COMMITTEES BY THE FOOD AND DRUG ADMINISTRATION

(Part 3)

FRIDAY, OCTOBER 31, 1975

HOUSE OF REPRESENTATIVES,
INTERGOVERNMENTAL RELATIONS
AND HUMAN RESOURCES SUBCOMMITTEE
OF THE COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 2247, Rayburn House Office Building, Hon. L. H. Fountain (chairman of the subcommittee) presiding.

Present: Representatives L. H. Fountain, Don Fuqua, Edward Mezvinsky, Elliott H. Levitas, John L. Burton, Robert F. Drinan, and John W. Wydler.

Also present: Full Committee Chairman Jack Brooks.

Staff present: Delphis C. Goldberg, professional staff member; Gilbert S. Goldhammer, consultant; and Richard L. Thompson and John Duncan, minority professional staff, Committee on Government Operations.

Mr. FOUNTAIN. The subcommittee will come to order.

The record will show that a quorum is present.

In the spring of 1974, the subcommittee held hearings on FDA's use of advisory committees and FDA's compliance with the requirements of the Federal Advisory Committee Act. Additional hearings on this subject were held in April and May of this year. At those 1975 hearings, I indicated that they would probably be the final subcommittee hearings prior to completion of a report on the use of advisory committees which was then in preparation. However, new information recently brought to the subcommittee's attention has necessitated this hearing this morning.

It was repeatedly stressed in the hearings last year that an agency may not legally utilize an advisory committee to deal with issues or questions which the agency itself has the competence to resolve. The Federal Advisory Committee Act was intended to preclude such non-essential use. The regulations and guidelines of both HEW and the Civil Service Commission also preclude such use. Ample evidence was developed during the hearings that FDA was utilizing advisory committees in matters which FDA itself was capable of deciding without advisory committee consideration.

It is important to note here that this committee, in House Report No. 91-1585 on the "Regulation of Cyclamate Sweeteners," specifically commented on the impropriety of using advisory committees to make recommendations on matters that an agency had already decided or which were not within the professional competence of the

advisory body. The committee specifically recommended in this connection that:

FDA and HEW confine their use of scientific advisory committees to the consideration of clearly defined issues which are within the competence of such bodies. Such bodies should not be asked to give advice on matters which the regulatory agencies itself has the capability to resolve.

I might add that the committee report just cited is part of the legislative history of the Federal Advisory Committee Act, which is under the legislative jurisdiction of the Committee on Government Operations. The evidence available to us appears to indicate that FDA intends to utilize an advisory committee in a manner that was specifically criticized by our committee in its cyclamate report, and discouraged during the subcommittee's earlier hearings. If that is so, the subcommittee's efforts to achieve a proper and efficient use of advisory committees may have been in vain.

Our hearing today is concerned with several drug products of similar composition, labeled as N2 and RC2B, that are being promoted for use in dental root canal work, which I might say I am in the process of having done right now.

Mr. WYDLER. Mr. Chairman, maybe you should take yourself out of this matter.

Mr. FOUNTAIN. The information made available to the subcommittee indicates that in the past FDA has consistently held that these drugs are not generally recognized as safe and effective and that they may not be shipped in interstate commerce. It is apparent, however, that FDA is not acting expeditiously to halt their unauthorized interstate sale. Instead, FDA has decided to refer the matter to an advisory committee. Consequently, the subcommittee wants to ascertain why this is essential, inasmuch as FDA has already determined that these are new drugs and, therefore, contraband products in interstate commerce.

The unnecessary use of an advisory committee, in my opinion, is not only wasteful of public funds and of the time of experts, but also contributory to delays in law enforcement and public protection. FDA has repeatedly told Congress that it must neglect important areas of enforcement because of inadequate funds. In the light of this testimony, one might expect FDA to use its limited resources with the greatest possible prudence and efficiency.

The subcommittee will now proceed with an examination of FDA's regulatory decisions regarding these drugs to determine whether or not the use of an advisory committee would be appropriate, and whether FDA has been providing adequate health protection to the public.

The subcommittee staff has ascertained from FDA records that the drugs in question, namely, N2 and similar preparations such as RC2B, are being used by some dentists employing a method of root canal treatment advocated by Dr. Angelo Sargenti, a Swiss dentist. The drugs apparently contain, among other ingredients: paraformaldehyde, lead oxide, hydrocortisone and/or prednisolone.

One of the things we want to find out in this hearing is whether drugs of this type have been demonstrated to be safe and effective. They may be, but the law says they must be demonstrated to be, safe and effective.

We will take testimony first from three members of the dental profession who are experts in this field of dentistry and are also familiar with the drugs in question. The witnesses are: (1) Howard Martin, D.M.D., who practices dentistry both in the District of Columbia and in suburban Maryland, and who is associated with the Georgetown University School of Dentistry; (2) Stephen Cohen, D.D.S., of San Francisco, Calif., who is affiliated with the University of the Pacific School of Dentistry; and (3) Dudley Glick, D.M.D., of Beverly Hills, Calif., who is affiliated with the University of Southern California School of Dentistry.

Doctors, I want to welcome you and thank you for your willingness to testify.

Will you please take seats at the witness table. Although each of you will make his own individual statement, I think it would be advantageous for the subcommittee to withhold questioning until all three statements have been presented. We can then put questions to you sitting as a panel.

Dr. Martin, will you please proceed with your statement at this time.

**STATEMENT OF HOWARD MARTIN, D.M.D., F.A.C.D., GEORGETOWN
UNIVERSITY SCHOOL OF DENTISTRY**

Dr. MARTIN. Mr. Chairman and members of the subcommittee, I wish to thank you for allowing me the opportunity to come before this committee and present my information regarding this new dental drug, N2.

Mr. Chairman, I have submitted my curriculum vitae with my prepared statement. In order to save time, I am requesting that it be made part of the record.

Mr. FOUNTAIN. It will be made a part of the record.

Dr. MARTIN. I will summarize my present status and proceed immediately with my statement.

I practice my specialty of endodontics in the District of Columbia and Silver Spring, Md. I am a diplomate of the American Board of Endodontics and a fellow of the American College of Dentists. I am a professorial lecturer in endodontics at the School of Dentistry, Georgetown University, and lecturer in post graduate endodontics, School of Dentistry, University of Pittsburgh.

I am consulting endodontist in the department of oral surgery of the George Washington University Hospital, staff endodontist at Prince George's General Hospital and Medical Center and consulting endodontist at the outpatient clinic of the Veterans' Administration Hospital, Washington, D.C.

Endodontics is that phase of dentistry which deals with the treatment of diseases of the pulp and its adjacent periapical tissues. The science of endodontics has made great advances in the past several years. Endodontics now has a predictable, reproducible, biologically oriented basis for therapy. The drug, N2, is not biologically based or oriented. A severe dichotomy results because of this. The N2 is applied to a definite biologic system—the root canal and its attendant periapical tissue.

My knowledge of N2 originally was from an academic point of view via readings in various national and foreign dental journals. Occa-

sionally, due to the area in which I practice, I would see a patient who had been treated with this drug.

Within the past few years, the U.S. promoters, the American Endodontic Society, as distinguished from the American Association of Endodontists, an American Dental Association-sponsored organization, developed a strong media campaign and local area dentists began to utilize the drug. It was at this point that I started to delve into the background of the new drug, N2.

In a search of the literature, I traced articles—the scientific articles are abstracted and summarized under their experimental headings and listed for reference—from 1962 through 1975 relating to N2. These articles were from reputable scientific journals in the United States, Austria, Britain, Australia, Japan, and Sweden. The experimentation was accomplished by well-known researchers, all university affiliated.

The conclusions of these articles was that N2 is an unacceptable drug in endodontic therapy. This coincided with my own clinical observations plus that of other dentists—usually oral surgeons who were performing surgical retreatments of these teeth. The same general feeling prevailed at most dental meetings. I discussed this drug with many endodontic teachers and researchers and found them in agreement with the published scientific results.

The promoters of this drug have varied their formulations over the years adding lead, steroids, mercurials, and titanium in different amounts and developing a new formula every other year. I have not been able to find, in the scientific literature, any positive evidence to substantiate their claims.

The numerous N2 formulations over the years have led to a lack of definition of components and has led to the newest element in the formula—lead tetroxide. The drug has been shown to be resorbable in periapical tissue and the root canal. The material must be disposed of somewhere in the biologic system. Three different studies have shown the lead to be found in the adrenals, kidneys, spleen, liver, and bone. N2 advocates feel biology is unimportant; however, we must consider the biologic system, inasmuch as the resorbed material will affect it in some manner.

The use of paraformaldehyde—the active basic ingredient in N2—is contraindicated in endodontic therapy. Drugs are considered merely adjunctive to proper debridement, bactericidal irrigation, and dimensional filling of the root canal. The least irritating drug should be utilized. The usage of severe necrotizing drugs is to be condemned. The unfortunate addition of steroids to this drug has the potential to exacerbate an active infection. The American Endodontic Society stated that 25 percent of treated patients have to have a surgical approach during endodontic treatment. I bring your attention to that statement by Dr. Werts published in the "Dental Survey of 1971." This may well be one of the reasons.

The drug, N2, is open to question from safety, efficacy, and toxicity. The N2 promoters have made misleading representations in their advertising material. Their theories are based upon empiric postulations; biological experimentation is denied.

At a recent symposium, held at the National Academy of Sciences, there was debate over the concept of human experimentation, which is what the N2 promoters extol. The conclusion of the National Acad-

emy of Sciences was that all clinical studies must be done only after basic biologic testing has been accomplished and warrants further trials. All basic biologic testing on N2 has been negative.

The potential long-term toxicological problems of lead, mercury, and titanium in N2 must be considered a hazard. Paraformaldehyde is a severe necrotizing agent to connective tissue. It is unwise to add a further load on a biologic system that may be strained in our changing environment. It is no longer sufficient to say a substance is toxic. We must also know the nature and duration of toxicity and exposure. In the root canal we can have a constant leaching of the material—all deleterious and cumulative. As such, it should not be utilized as an experiment on patients seeking routine endodontic care. The whole approach, media, and material should be proscribed immediately.

In September 1974, I wrote a letter to Secretary Weinberger of HEW regarding the N2 situation. I did this inasmuch as earlier correspondence from various dentists, directed to the Division of Surgical-Dental Drug Products, Office of Scientific Evaluation, Bureau of Drugs of FDA, had elicited replies that the drug was non-approved and being investigated.

I received a reply to my letter on October 16, 1974, from Mr. Robert Wetherell, Director of Legislative Services, FDA, explaining N2 in the same manner as the replies received by other inquiring dentists regarding N2. I called Mr. Wetherell and asked whether the final paragraph of his letter meant that the preprinted prescription order form was invalid. He answered affirmatively. Upon further discussion, Mr. Wetherell referred me to the Division of Regulatory Operations, Office of Compliance, Bureau of Drugs.

I spoke with a high official in that Division and, though they were aware of the N2 situation for some time, they did not have all the details regarding it. I offered to help and present them an updating as to this questionable promotion of a new and nonapproved drug.

During the next 2 months, there were several phone calls between myself, Compliance, and a high official in the dental section of Surgical-Dental Drug Products. I was granted time to make an oral presentation, along with Dr. Milton Siskin, professor and chairman, department of endodontics, School of Dentistry, University of Tennessee, in January 1975. This was aided by Dr. Francis Kelsey, Bureau of Drugs, to whom I had submitted much of the scientific material.

Dr. Kelsey was present at the January 1975 meeting as was Mr. Al Lavender, Mr. Richard Chastonay, Mr. Gary Boyer, Dr. Joseph Renna, Dr. Clarence Gilkes, Dr. Margaret Clark, Dr. John Carr, Dr. George Wade, and Mr. Wetherell.

I was instructed by Dr. Gilkes to tell the participants what, if anything, was new regarding this drug, N2. I cited the various letters of reply from the FDA to inquiring dentists, indicating nonapproval, invalidity of the prescription form, illegality of interstate movement, and FDA attitudes toward other potentially hazardous drugs; and I asked why no action had been taken regarding N2.

As the discussion proceeded, it became apparent that the Bureau of Drugs was not aware of the scientific articles since 1964 that I cited regarding N2. However, Dr. Kelsey, did state, based upon her readings of recent articles, that the drug be banned. Dr. Clark then

asked if I could supply the FDA with this material and letters from the foreign state health departments that had banned this drug. She said this would be very helpful.

In the spring of 1975, I supplied the following documents to Dr. Gilkes: letters from the foreign health departments that had banned the drug; letters from the American Dental Association and dental organizations; letters from dental schools in the United States and Europe; the pertinent scientific articles from 1964 through 1975 in abstract form with their full references; an analysis of the American Endodontic Society's promotion material; a summary of the foregoing information; and a list of previous FDA citations in analogous instances where they had acted legally and restrictively. This is the memorandum that I had supplied them [holding up a booklet].

I asked Dr. Gilkes to make a copy of the material as I had only the originals available. Dr. Gilkes informed my wife, who had delivered the material to him, that it was just too much to do. My wife called me at the office and asked what to do. I told her to go to a printer in the area, duplicate the material, and redeliver it to Dr. Gilkes.

Several months went by, and I was in touch with Dr. Gilkes as to the disposition of the report. I was told by Dr. Gilkes that he had given it to a toxicologist for evaluation. In June 1975, I spoke to the Office of Compliance, and an official there told me that they thought they had a case but needed the concurrence of the scientific evaluation section.

In July 1975, I spoke with Dr. Gilkes again. I was told at that time that the person who would make the final decision regarding the N2 situation would be Dr. Richard Crout, Director of the Bureau of Drugs. It was further added that if I could not apply political pressure or convince Dr. Crout, nothing would be done. Additionally, Dr. Gilkes said that Dr. Clark was tired of this matter and did not wish to be involved any more. I am only indicating what Dr. Gilkes said. I am not personally aware of Dr. Clark's attitude.

In late August 1975, I again spoke with the Office of Compliance. Apparently, they were the only section concerned with the new drug issue.

I learned that Compliance had submitted various options and recommendations to Dr. Crout. This material had been turned over to Dr. Leventhal, Dr. Crout's assistant. Dr. Leventhal opted for another hearing regarding the drug. I then spoke with Dr. Gilkes, who is the executive secretary for the dental advisory board, and was informed that N2 was not on the agenda for this year. It seemed that the entire subject and hearing was now in an uncertain state.

In September 1975, Newsweek magazine called me regarding an article they were doing about N2. At this point, following Dr. Gilkes' advice, I contacted my Congressman, Mr. Gilbert Gude. I outlined the situation and Congressman Gude's office said they would look into the matter. Due to Congressman Gude's efforts, Dr. Gilkes called me, and we discussed the situation again. Dr. Gilkes told me that my memorandum was mostly dental school statements with only one scientific article.

It struck me at that moment that, even though the material had been in the Bureau's hands for several weeks, they seemed unfamiliar with the report's contents. This is based on the fact that I had included a

scientific article from the American Dental Association in the opening section of organizational statements. I refer to the memorandum where I listed the material in this manner: Organizational statements, U.S. dental agency statements; U.S. dental school statements; foreign dental school statements; foreign health department statements; and abstracts of scientific articles. You would have to go through a fair amount to get to the articles.

It is a distinct possibility that they did not go beyond that opening section of the report. Dr. Leventhal later called me and I was told the same thing again—that I had nothing but testimonials. Dr. Leventhal was obviously as knowledgeable as Dr. Gilkes regarding the content of the report.

We proceeded to discuss some of the FDA letters of reply which Dr. Leventhal said were merely opinions. After a discussion of almost 2 hours it was agreed to put N2 on the agenda for the dental advisory board hearing on November 12, 1975.

In order to check on Dr. Leventhal's assertion that the various letters of reply were opinions, I procured a copy of the Federal food, drug, and cosmetic laws. Upon reading the acts, as a layman in the legal field, it seems the following sections are pertinent to new drugs: section 201, section 301, and section 505.

Several days later Dr. Gilkes called and asked if I could supply him with the complete scientific articles, in place of the abstracts, inasmuch as they could not locate them in their library. On October 17, 1975, I went over to the FDA library to let them duplicate the necessary material. I conduct a private practice and arrived at the library at 3:45 p.m. The copying of the articles was incomplete at 4:15 p.m., but the librarian had to stop in order to make his car pool.

It is curious that in the spring of 1975 the Bureau could not reproduce my documents, but could do so in the fall of 1975. This has been my contact with the Bureau of Drugs to the present time.

In my opinion, Dr. Gilkes was correct in stating that political pressure was the means to achieve action. I feel that, until Congressman Gilbert Gude inquired on my behalf, the Bureau of Drugs had totally ignored my efforts. I feel that asking me to develop all the material in the report, which consisted of several hundred work hours of compilation, correspondence, evaluating, and summarizing, was a method of distraction—FDA hoping that I would become discouraged. I am not convinced that my report was read until the situation became active due to Congressman Gude's intercession.

The Bureau of Drugs had put the burden of proving harmfulness upon myself and other dentists, while it is my understanding that the law states it is the promoter who must prove safety and effectiveness. It is the promoter who must demonstrate animal evidence based upon adequate and well-controlled studies. It is the promoter who, in advertising, must detail side effects and contraindications. The entire burden of negative proof has fallen to myself and my colleagues at various university dental schools. In essence, I was asked to do the library research, the collating, the gathering of evidence, the presentation, and supply all of this to the Bureau of Drugs. I have done so as, I believe, have my colleagues.

Based upon the evidence that the drug N2 and associated formulations are new drugs and not approved as required by law, it is my

opinion that the Food and Drug Administration should ban the drug, N2, and its associated formulations.

I do not believe it is in the public interest for the Food and Drug Administration to continue its dilatory approach to the new and non-approved drug, N2, or to disregard the legal statutes of the Federal Food, Drug, and Cosmetic Act.

The patients and public of the United States deserve the highest quality of professional dental care and regulatory standards.

Thank you, Mr. Chairman.

[Dr. Martin's scientific references and curriculum vitae follow:]

Tissue culture reactions—1,2,3,4,5,6,7

N2 has a severe derangement effect on cells. The cells cannot multiply thereby decreasing their regenerative and repair ability. Lead, mercury and titanium dioxide prevent cell multiplication while paraformaldehyde causes cellular degeneration. As N2 resorbs into tissue, its cytotoxicity remains since its toxic components are water soluble. The paste, in the set state, continues to cause degeneration of cells affecting cellular respiration and leads to chronic inflammation inhibiting growth and repair.

Connective tissue reactions—2,8,9,10,11,12,13

N2 has an overall long lasting inflammatory action. The paste is resorbable, it does not form a hard tissue and it affects the periapical tissue in a deleterious manner. It leads to ankylosis, resorption, necrosis and poor clinical results. It is an irritating material which places an additional burden on the defense mechanism of the periapical tissue. The type of healing generated is questionable since there is little or no hard tissue formation and the fixed cells may eventually break down into a foci of necrotizing material. The sclerotic zone has been identified as necrotic and as such is irritating to the tissue apical to the zone causing metaplastic change.

Bone reactions—14,15,16,17

Bony reactions have been sequestration, long standing chronic inflammation, ankylosis and necrosis. There is reduced healing with a concurrent production of osteoclasia and resorption. Macrophages with the paste in its granules have been found, after prolonged periods of time. This indicated the materials constant resorbability and eventually leads to defective obturation. Defective obturation is the prime cause of endodontic failure.

Lead reactions—18,19,20

Lead has been demonstrated to be a bone seeker and toxic. It has been shown that lead resorbed from the root canal paste is present in increased amounts in blood, adrenals, kidney, spleen, and bone. The lead, detected, achieves the permissible daily intake from the paste filling alone. The possibility of an increased toxicological burden on the body must be considered. The duration and nature of exposure to such material must make the prudent practitioner consider alternatives especially in the light of safer and more predictable means being available.

Paraformaldehyde reactions—21,22

Paraformaldehyde is an effective antiseptic only in high concentrations. As used in pastes, the antiseptic effect is available for approximately seven to ten days. In the set state, its effect is negligible. The essence of paraformaldehyde is to create an intra-vitam fixation of tissue. This necrotizing action creates a zone of degenerated material that is a constant source of chronic inflammation and potential breakdown. As a fixing agent, the periodontal structures will also be affected creating ankylosis and resorption. The action is not self limiting and creates damage periodontally and also potentially from a restorative aspect.

Sclerotic zone—22

This zone has been shown histologically to be necrotic in all cases. As such, it must be regarded as a focus of constant irritation and source of breakdown. Apical to the sclerotic zone, the tissue undergoes metaplasia. The characteristics are chronic inflammation, resorption, foreign body reactions, resorbed N2 particles, ankylosis and necrosis. As a barrier to N2 reactions, the sclerotic zone is totally ineffective and is, by itself, destructive to tissue.

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CURRICULUM VITAE OF HOWARD MARTIN, D.M.D., F.A.C.D.

Practice.—Limited to Endodontics, at 909 Pershing Drive, Silver Spring, Md., 1234 19th Street, N.W., Washington, D.C.

Education.—Hobart College; Tufts University, School of Dental Medicine, D.M.D.; and University of Pittsburgh, School of Dentistry; Certificate in Endodontics.

Board Certification.—Diplomate, American Board of Endodontics.

Honors.—Fellow, American College of Dentists.

University affiliation.—Professorial Lecturer in Endodontics, School of Dentistry, Georgetown University; Lecturer, Post Graduate Endodontics, School of Dentistry, University of Pittsburgh.

Hospital Affiliation.—Consulting Endodontist, Department of Oral Surgery, George Washington University Hospital; Staff Endodontist, Prince George's

General Hospital and Medical Center; Consulting Endodontist, Outpatient Clinic, Veterans' Administration Hospital, Washington, D.C.

Professional Organizations.—American Dental Association; American Association of Endodontists; Maryland State Dental Association; District of Columbia Dental Society; Academy of Dental Medicine; Academy of General Dentistry; Southern Maryland Dental Society; Maimonides Dental Society, Washington, D.C.; American Academy of Dental Electrosurgery; and Federation Dentaire Internationale.

Publications

"Endodontics on the Primary Dentition: Its Current Status", Georgetown Dental Journal, December, 1966.

"Permeability of the Apical Third of the Root to Drugs used in Endodontic Therapy: An In Vitro Study", J. Oral Therapeutics and Pharmacology, May, 1968.

"An Evaluation of Media Used in Electric Pulp Testing", Oral Surgery, Oral Medicine & Oral Pathology, March, 1969.

"Basic Corrective Endodontics", J. Maryland State Dental Association, April, 1970.

"Rationale of Successful Endodontics", J. District of Columbia Dental Society, December, 1970.

"Telescope Technique for Endodontics", J. District of Columbia Dental Society, June, 1974.

"Quantitative Bacteriologic Evaluation of an Old and a New Endodontic Irrigant", J. Endodontics, May, 1975.

"Ultrasonic Disinfection of the Root Canal", accepted, Oral Surgery, Oral Medicine & Oral Pathology.

"Connective Tissue Reactions to Endodontic Irrigants", in preparation.

"Ultrasonic Sterilization of Dental Instruments", in preparation.

Clinical presentations.—Pennsylvania Dental Society, 1965; Maryland State Dental Association, 1966; Maryland State Dental Association, 1967; American Dental Association, 1967; District of Columbia Dental Society, 1967; Maryland State Dental Association, 1968; Southern Maryland Dental Society, 1968; Virginia State Dental Association, 1968; District of Columbia Dental Society, 1968; Maryland State Dental Association, 1969; Southern Maryland Dental Society, 1969; American Dental Association, 1969; Southern Maryland Dental Society, 1970; American Association of Endodontists, 1970; Southern Maryland Dental Society, 1971; Alpha Omega Dental Fraternity, Washington, D.C., 1972; District of Columbia Dental Society, 1975; and Maryland State Dental Association, 1975.

Military.—Ensign, U.S. Naval Dental Corp, 1960–1962; Lieutenant, U.S. Naval Dental Corps, active duty, 1962–1964; Lieutenant, U.S. Naval Dental Corps, active reserve, 1964–1966; Lieutenant Commander, U.S. Naval Dental Corps, active reserve; and Administration and Training Officer, Georgetown Dental School Unit, 1966–1970.

COMMITTEES

Maryland State Dental Association.—Program, 1969; Newsletter, 1971–1973 (endodontic consultant).

Southern Maryland Dental Society.—Scientific Editor, 1968–1971, 1972–1973; Public Relations, 1968–1970; and Program Chairman, 1975–1976.

District of Columbia Dental Society.—Scientific Editor, 1972–1973; Program, 1973; Spring Post Graduate Meeting, Program, 1973–1974; and Spring Post Graduate Meeting, Lunch & Learn, 1975.

Maimonides Dental Society, Washington, D.C.—Executive Committee, 1967–1969; Treasurer, 1970; Secretary, 1971; Vice-President, 1972; President-Elect, 1973; and President, 1974.

American Association of Endodontists.—Membership, 1966–1968; Ethics, 1968; Literary, 1969–1970; Honors & Awards, Chairman, 1970–1973, Advisor, 1974; International Student Awards, Chairman, 1972–1974; and Committee on Scientific Evaluation, 1974–1975.

Alpha Omega Dental Fraternity.—Executive Committee, 1970–1971; and Program, Chairman, 1971–1972.

Maryland Society of Endodontists.—Founding Member, 1970; Interspecialty Committee, 1974; and Program, 1975.

Greater Washington Endodontic Club.—Founder, 1970; Program, Chairman, 1971; and Treasurer, 1974.

Mr. FOUNTAIN. Thank you, Dr. Martin, for a forthright statement and for sharing your experience and your views. We will now hear from Dr. Stephen Cohen.

Mr. BURTON. Mr. Chairman, if I may out of order, I would like to welcome Dr. Cohen, who not only lives in one portion of my district but also represents the University of the Pacific Dental School which is in another portion of the district.

Dr. Cohen is very respected in our community and the University of the Pacific School of Dentistry has one of the most novel outreach programs for elderly persons. The school has minibuses available which bring people in for low cost or free dental care. I would like to welcome the doctor to Washington and to the committee. I know that his testimony will be very worthwhile and to the point.

Mr. FOUNTAIN. Thank you, Mr. Burton. Dr. Cohen?

Dr. COHEN. Thank you very much.

I would also like to extend a note of thanks to you for giving me this opportunity to present my information to all of you.

Parenthetically, I see that we are now setting up the movie screens which I had requested to augment the material which I have to present. The two Kodak carrousels will be set up because I thought it might be helpful in terms of graphic matter to effectively illustrate the points that I would like to raise.

So, with your permission, if I may request it, I would like the equipment set up. Therefore, I would like to postpone my comments until Dr. Glick has a chance to present his information.

If that is not reasonable at this time, I will read my prepared statement.

I am amenable to whatever the committee suggests.

Mr. FOUNTAIN. How long would it take you to get it up, Doctor?

Dr. COHEN. I see that there are two screens over there. If the carrousels are available it would not take too long.

Mr. FOUNTAIN. Perhaps Dr. Glick can go ahead with his testimony while you are engaged in that process.

Dr. COHEN. Thank you very much.

Mr. LEVITAS. Mr. Chairman, may I inquire whether one of the witnesses today is going to enlighten me for one as to what the process is that we are talking about.

I understand that endodontics has to do with root canals but it is possible that someone other than I does not understand precisely what is involved in this whole controversy as far as the procedure is concerned.

Mr. FOUNTAIN. I think Dr. Martin generally described it in his statement.

Mr. LEVITAS. I followed his statement but I was left in doubt.

Also, I might say that I am not familiar with all of the *dramatis personae*. The names that Dr. Martin referred to were just names. I wonder if they could be more fully identified.

Mr. FOUNTAIN. Mr. Levitas, I could yield to you for questioning if you like at this point.

Mr. LEVITAS. I would abide by the chairman's request.

I followed his statement, but I am not just exactly sure what it is that is done and what these gentlemen do, other than the drugs mentioned.

Mr. FOUNTAIN. I think that will be brought out in the process of questioning.

Other witnesses will take up that subject.

Mr. MEZVINSKY. Mr. Chairman, are we going to hear from Dr. Glick now? It was my understanding we were going to go ahead with Dr. Glick.

Mr. FOUNTAIN. Yes, we will go ahead with Dr. Glick.

STATEMENT OF DUDLEY GLICK, D.M.D., F.A.C.D., F.I.C.D., UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF DENTISTRY

Dr. GLICK. Thank you, Mr. Chairman.

Throughout the long history of medicine and dentistry, a procedure or drug has been periodically proposed as a panacea. After much publicity and promise, most of these so-called "miracle cures" are exposed for what they really are, exaggerated and useless. Wisely they are then discarded but unfortunately not before they have left an undesirable effect upon the profession and public. N2 is just such a self-styled miracle drug.

N2 has aroused considerable controversy over the past few years, insinuating that the established endodontic techniques are outmoded. This reactionary thrust is consistent with a current onslaught against the "establishment." Rather than brush it off, let us try to evaluate some of the drug's components and some of the claims.

In order to discuss the use of N2 for teeth in need of endodontic therapy, we must first define that which we are to discuss. The symbol N2, as currently used, can refer to either a material, which is a paste used to seal root canals, or to a technique for treating endodontically involved teeth employing N2 paste as a root canal filling material.

This type paste is not "new, revolutionary, or brilliant," as Sargenti so unabashedly describes it. It has precedent as far back as 1870—Walkoff's Paste—and 1900—Gysi's Paste. In fact, Sargenti's paste is based on a 50-year old formula, Robin's Paste. They were found inadequate and wanting and so fell into disrepute. Not until a predictable technique and solid-core filling material was utilized have we been able to retain teeth safely, comfortably, and with longevity.

Parenthetically, the N2 method is not taught at any of Switzerland's four dental schools.

The formula for N2 paste is a variation of a zinc oxide-eugenol root canal cement. However, it differs from the usual zinc oxide-eugenol formulation inasmuch as it contains a corticosteroid, lead oxide, an antibiotic, paraformaldehyde, and a coloring and deodorizing agent. The quantities of each of these ingredients tend to vary from batch to batch.

This information was developed and has been attested to by both the Food and Drug Administration of the United States of America and by the Commonwealth Bureau of Dental Standards of Australia.

The originator of the N2 formula, Dr. Angelo Sargenti, claims that the material is not resorbable and is well tolerated by the periapical tissues. At other times he maintains that it is resorbable.

We know, however, that zinc oxide-eugenol pastes are resorbable as is demonstrated by the gradual radiographic disappearance of zinc

oxide—eugenol cements which are displaced into the periapex or around the end of the root.

Langeland has demonstrated that within minutes after application of N2 to the periapical tissues macrophages—these are cells that go in and ingest and take away irritants—will start to ingest the lead oxide. Shortly afterwards, this lead can be traced to the liver where the body attempts to detoxify it.

The hepatic damage, which can occur as the result of the introduction of heavy metals into the body, can be considerable. The significance of the introduction of even a small amount of lead into body tissues must be given greater concern today as we are assaulted from all corners of our environment by substances which have the potential for liver damage. [See Shapiro in the references.]

The incorporation of an antibiotic in any material to be placed inside a root canal has been a questionable practice and a subject for debate. The possibility for sensitivity reactions is always present.

All too often dentists tend to look upon inflammation as a detrimental process or at least, a hindrance. We lose sight that inflammation is one of the ways an organism combats infection or irritation. The inflammatory response results in a walling off of the instigating agent. This having been accomplished, the body can use its defenses most economically. The use of any anti-inflammatory agent such as a corticosteroid greatly enhances the possibilities of widespread dissemination of noxious material.

Paraformaldehyde may react in the presence of moisture to form formaldehyde. We are well aware of the toxic effects of formaldehyde on vital tissue. Consider the possibility of the mandibular root whose apex approximates the mandibular nerve or the maxillary root whose apex has little or no bone between it and the sinus membrane. Reports of parasthesia (numbness) of the mandibular nerve in conjunction with the use of N2 do appear in the literature. There is clinical evidence to show that instances of sinus damage have occurred.

Sargenti, in his text, shows as an example of the body's tolerance of his material, slides in which a hard tissue or cemental bridge sealing the apex of a tooth treated with N2 is seemingly present. This is not even a clever sham, as it only involves choosing a poorly representative section.

Langeland, a noted dental histopathologist and authority on the serial sectioning of teeth and periapical tissue, has yet to demonstrate a single apex which has been completely sealed by hard tissue. He has found that there are always areas where the bridging is incomplete and soft tissue remains.

N2, as a philosophy of endodontic treatment, is more difficult to define. This difficulty exists primarily because Sargenti's advocates have taken him too literally, and his books contain many inconsistencies. He has made many claims for his wonder drug. Although Sargenti writes about complete debridement of the canal, he vocally implies that his material is so effective that it will take care of whatever tissue is left behind. One can readily see how this can be distorted to the point where the majority of the canal contents are left untouched, particularly where the emphasis is placed on simplicity and rapidity. Often little more is done than a pulpotomy—and this means just cleaning

out the top of a root canal and placing a medication over it—and only the chamber filled with the wonder drug.

Inasmuch as dentists have been taught sound biologic principles, endodontic expediency or simplicity with the sacrifice of integrity is every bit as repugnant as expediency in the face of ignorance. If simplicity is the criterion for a therapy, why should it not apply to all of dentistry? Should we discard sound, basic principles on which all dental therapies rely?

You might well ask: How then can a technique with few if any substantial guidelines work? There are two answers.

First; nature is very kind. Often, all that is required is a slight shift in the balance of things. Just opening into the chamber of a symptomatic tooth can bring relief for extended periods.

Second; how do we define success? Is the absence of subjective symptoms the sole criterion of success? The patient may be comfortable, yet pathology can exist and may increase in size and severity.

Success of any treatment must be measured against time. Dentists are familiar with the patient who has had a tooth with incomplete endodontics performed years ago, possibly in Europe. The tooth has been comfortable and radiographically appears to be free of pathology. However, a considerable number of these teeth eventually present with exacerbations.

Can we consider the previous endodontic treatment of this tooth a success? To date, our fund of knowledge indicates that the treatment of choice—the treatment with the greatest predictability—is the complete debridement and cleaning of the canal followed by obturation of the canal to the apex with a nonresorbable material of low-irritation potential.

Advocates of N2 have substituted a mystique of “magic paste” which has the “remarkable property to neutralize toxins,” instead of meticulous time-proven technique. Their unconfirmed statistics have been gathered from enrollees of previous N2 courses to confirm the reported nearly 100 percent success rate of this “fantastic” material.

Such an astounding success rate certainly has its impact on dentists, when compared to the so-called “outdated methods” taught in our universities which offer only 92–94 percent success.

We wonder if many dentists anxious to reach this mecca of perfection have asked how this statistical percentage was determined. The questionnaire apparently was prepared to teleologically achieve specific results and was designed in such a manner as to suggest or slant the response without demand for proof, accuracy, or long-term recalls.

The 92–94 percent success rate offered by existing root canal procedures is based on long-term studies with rigid, experimental designs and criteria for evaluation, including 5 and 10 year—and even more—recalls. Those studies were not based upon collective opinions such as asked for in the N2 questionnaire whose criterion of absence of pain does not adequately validate success. Successful treatment relies upon objective evaluation, predictability, and reliability.

Modern endodontics have honestly reported that treatments are less than 100 percent successful. Rather than direct these results against us, it would behoove the proponents of N2 to apply these same rigid designs for the statistical evaluation of success of their material.

Patients expect the best treatment possible no matter who is in charge of the procedure. The acceptance of any responsibility by a dentist is an invitation to the patient that what is intended will be performed in the best possible manner. If a dentist undertakes the delivery of a service, the patient has every right to expect that nobody could do it better. Each of us must therefore know what to do; but even more important, what not to do. In other words, all of us must practice selective dentistry, not convenient dentistry.

No form of endodontics was designed merely to make things easier for the general practitioner or, conversely, to serve the specialists. The sole purpose of all dentistry is to treat the patient therapeutically, not expeditiously.

In the method under consideration, skill, accuracy, and ability are not absolute prerequisites for treatment. This is a very attractive invitation, inasmuch as dentistry is a demanding profession and many dentists work too hard anyway.

However, as we study the evolution of the Sargenti method, it is heartening to observe that its sponsors are gradually incorporating more and more of the guidelines of conventional endodontics which they had originally discarded. As this occurs, there is an inevitable loss of the attractive simplicity previously offered. As the method becomes more and more demanding, it will also become less desirable and appealing.

So in conclusion, why not use N2?

Because it: (a) Will resorb; (b) cannot be controlled; (c) cannot be condensed; (d) has free residual medication; (e) will leak; (f) is a pseudoseal; and (g) medications can be toxic.

The virtues of the Sargenti method are exaggerated out of proportion to its contributions to endodontics and total dentistry.

The Sargenti method does more for the convenience of the dentist than it does for the patient.

There should not be different standards of treatment in endodontics for GP's and specialists.

The "N2 attraction" is derived from expert promises and rationalization.

The reduction or elimination of pain, while impressive, is not the criterion for success by any means.

The secret of success in all phases of dentistry, N2 notwithstanding, is "hard work."

If I may end this with a statement that was made by General Bhaskar at a meeting at the Beverly Hills Academy of Dentistry on October 20, 1975, "I have refused to authorize the use of the Sargenti method or material, including N2 and RC2B in any Army installation throughout the United States and the world. We have examined what is referred to as the 'sclerotic zone' and have found it to be a necrotic zone. (Necrotic meaning death—death of tissues there.) It is my firm belief that it is not the best that dentistry can offer."

I said in my letter I think a similar position had been taken by the Air Force this past year. This has been corroborated. It has been taken by the Air Force also.

Thank you very much for allowing me this period of time.

Mr. FOUNTAIN. Thank you very much, Dr. Glick.

[Dr. Glick's curriculum vitae and scientific references follow:]

SYNOPSIS OF CURRICULUM VITAE FOR DUDLEY H. GLICK, D.D.S.

Dudley H. Glick is Clinical Professor of Undergraduate and Graduate Endodontics at the University of Southern California, School of Dentistry, from where he graduated in 1953. He is a Past President of the American Association of Endodontists, a Past Pres. of the Southern California Academy of Endodontics and a Past Pres. of the Los Angeles Alpha Omega Chapter (undergrad and Alumni). He served as the 1st Chairman of the Endodontic Section of the American Dental Ass'n Council on Scientific Sessions. He is a past advisor to the ADA Council on Dental Health, and the U.S. Council on Dental Education. Also, he is a consultant on the Dental Specialty Relations Board and Dental Health Care Projects and a past member of the Advisory Board of Hospital Dental Services and the World Health Organization. He serves as a clinical consultant at the Long Beach V.A. Hospital Graduate Endodontic Program.

He is a diplomate of the American Board of Endodontics and a Fellow of the American and International Colleges of Dentistry. He is a contributor to Ingle's *Endodontics*, to *Current Clinical Dental Terminology* by Boucher and *Current Therapy in Dentistry* by Goldman et al Vol. 5 and several editions of *Dental Clinics of North America*. He has written numerous articles on endodontics and also on head pain. He has lectured in many universities and to a great many groups in the United States, South America, Europe and Australia.

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Mr. FOUNTAIN. Dr. Cohen, you may now proceed.

STATEMENT OF STEPHEN COHEN, D.D.S., UNIVERSITY OF THE PACIFIC

Dr. COHEN. Once again, sir, thank you and thanks to all members of the committee for your kind consideration of my unusual request for using a visual-graphic method for conveying the information that I would like to explain this morning.

I will set up the projectors and get them in focus. I will begin momentarily.

As an addendum, let me add that the University of the Pacific students refer to me as Dr. Mega-Cohen. For me a microphone is really an optional piece of equipment, so I will be standing back here and I can promise you that I will be heard.

I hope that this will be adequate in terms of reduction of light.

I would like to get right to the subject at hand. The focus of the whole discussion, as far as many members of the dental community are concerned, is the N2 formula which has been purported to the profession and implicitly to patients as being a panacea to take care of virtually everything, that is, all symptoms that patients may experience in a dental office. [Slide.]

Let me begin at the beginning. It begins with Dr. Angelo Sargenti himself. What you see on the right, that is the white letter on the blue background, is a diazo. It is merely a magnification of that which is virtually unreadable but photographed directly out of Dr. Sargenti's book.

Dr. Sargenti points out that this N2 material consists of titanium zinc-oxide eugenol with formaldehyde and what he refers to as radio opaque excipients. [Next slide.]

In different parts of our country, and in different States at different times this material had different names, and, I would add, different formulations; to wit, in 1971 in New York this material consisted of, as Dr. Martin had explained earlier, a corticosteroid and trioxo-methylene which is a precursor of paraformaldehyde. It also contained lead oxide and eugenol.

Mr. THOMPSON. What is an excipient?

Dr. COHEN. I would refer that to Dr. Martin for a brief reply.

Dr. MARTIN. The word "excipient," as defined by the medical dictionary, is more or less an inert substance added to a prescription as a vehicle to give it form.

I would bring your attention to the statement from Dr. Sargenti published in the October 6 ADA News, where he says, responding to the question of 25 variations of the Sargenti formula over the years, "Not at all, the formula is always the same; only the excipient is changed but this does not change the formula." This is a misnomer by Dr. Sargenti inasmuch as the substances added have been lead, steroids, and various other heavy metal oxides which are considered by most pharmacologists to be deleterious, so his statement of variations having no effect leaves something to be desired.

Mr. FOUNTAIN. Let me tell the members not to hesitate to ask questions.

Dr. COHEN. Yes; it would be most helpful.

Once again, I repeat that in various States and at various times the formulation was changed. [Next slide.]

To illustrate, a second time, in 1972, there was a substantial change in the formulation. Not only has the formulation changed, but depending upon which State, the name changed.

At that time in some States it was called RC2B rather than N2. Additional components and ingredients were added to the material. For example, a mercurial compound appeared and corticosteroids, reduced in percentage, were broken up in two types, prednisolone and hydrocortisone. The lead tetroxide was reduced in percentage from that of 1971 of 16½ percent, to 11 percent, and formaldehyde begins to appear in a concentration of 6.5 percent.

I would also add it was a very bad year for zinc oxide; a drop from 73 percent to 61 percent.

In 1973 once again the name had changed, and now it was called RC2. Again, some ingredients were added, additives were removed, but the common denominator that we are beginning to pick up here is that the corticosteroids remain. The mercurial compound—phenylmercuric borate—is present; lead tetroxide remains; and, finally, paraformaldehyde remains.

In 1974, in our State of California, this was the appearance of the formulation, not too dissimilar from 1973. Once again, we see the corticosteroids on the lower right side in the form of hydrocortisone and prednisolone. We see lead tetroxide remains unchanged; we see that phenylmercuric borate remains; and finally paraformaldehyde remains in the same concentration of 6.5 percent.

In 1975 the only thing that really changed was the name, instead of RC2 we find RETB. [Next slide.]

Any references that I make to literature from the American Endodontic Society I have brought with me, and I would be pleased to submit it for the record with your permission. One of the comments made, and this was made by Dr. Sargenti, is that experiments have shown that it is possible to vary the percentage of ingredients, the quality of ingredients, the number of ingredients, without influencing the effectiveness of the material itself.

This, ladies and gentlemen, is what strains credibility. [Next slide.]

In April of 1974 the Food and Drug Administration, the area shaded in red is what I have magnified on the screen at the right, also analyzed the material and indeed found what the proponents of the material stated; that indeed there was paraformaldehyde, and indeed there were mercurial components, and indeed there was a lead compound, and indeed there were corticosteroids. [Next slide.]

Let us consider some of these ingredients briefly. [Next slide.]

For example, let us consider mercury which we are concerned about in our environment. We are concerned about eliminating mercury in our food. [Next slide.]

We are concerned about eliminating it as a part of biologic treatment of people.

For example, let me introduce Dr. Nygaard-Ostby, one of the foremost researchers in the world in dentistry today. He points out that this material appeared one year and disappeared the next year, and the reason for that may have been that a study showed that there was quick distribution of this mercurial compound in bone marrow, in liver, in kidneys, and in the digestive tract of experimental animals. This is the particular reference that he was making March of 1973, to a very respected paper in the Journal of Oral Surgery. [Next slide.]

Considering lead, we are very concerned about lead in our environment, in gasoline, and in all other aspects of our existence. [Next slide.]

Goodman and Gilman, which is one of the most definitive texts on the pharmacological basis of therapeutics, points out that lead basically is a slow acting but insidious poison, and has no reason for existence in organic or inorganic forms in pharmacology today, either in medicine or in dentistry.

One of the most startling things about lead is that once it ends up in the bones, it cannot be removed. It is a one-way road. [Next slide.]

Dr. Ostby also points out that even though the concentration of lead is supposed to be 11 percent—in fact, some studies have shown that

the concentration of lead may be as high as 25 percent rather than 11 percent which is found on the preprinted prescription forms. The Australian Dental Association found likewise. [Next slide.]

The area shaded in blue states that they found almost 26 percent of lead oxide. This was not shown on the label. [Next slide.]

The American Endodontic Society in 1974 stated that in their research of lead they found that in the proper concentration lead poisons can be beneficial. I submit that there is no concentration of lead, in organic or inorganic form, that is biologically acceptable to the body. I would refer once again to Goodman and Gilman as one of the most definitive texts to emphasize this particular point.

[Next slide.] Let us consider what happens. In March of 1975 a biopsy was performed on a patient for whom this material was passed beyond the end of the root and ended up in the bone that surrounds the root.

A toxicological analysis was done on this material. It was found that the concentration of lead and formaldehyde was startling, and astonishingly higher than that which was found on the preprinted prescription forms.

[Next slide.] Let us consider formaldehyde. The proponents of this material state that it was never intended to be a biological material because of its formaldehyde content.

[Next slide.] Once again I refer to Goodman and Gilman about the pharmacological basis of therapeutics. They point out basically that formaldehyde is an embalming fluid. That is basically what it is.

[Next slide.] Let us consider something that I am particularly troubled by. A very good and effective drug for the right ailment, and that is, corticosteroids. Corticosteroids definitely have a place in modern treatment in medicine and dentistry today. What we are concerned about is the indiscriminate use of corticosteroids for all patients under all conditions regardless of what the diagnosis may be.

[Next slide.] The proponents of this material state that, in fact, this material accelerates healing. We find a completely contradictory statement in this definitive text by Goodman and Gilman where it is pointed out that corticosteroids, rather than helping the healing process, in fact delay the healing process.

[Next slide.] This material could not be all bad, obviously. If it were all bad I would submit that we would probably not be here today investigating this particular aspect of our communication with various governmental agencies.

It has certain socially redeeming values, if I may put it that way. [Next slide.] That is zinc oxide and eugenol. Is it a new idea? It is not. Zinc oxide and eugenol have been used in root canal treatments and other treatments for several generations.

[Next slide.] In Philadelphia, in September of 1973, Dr. Sargenti stated that this paste which contains formaldehyde cannot be perfectly nonirritating, which is an understatement, in the area which surrounds the end of the root.

But his observations for 20 years authorizes him to conclude that the material is reasonably well tolerated. I submit, however, that when this material is taken up by the body and absorbed by the body and distributed throughout the body, then where does this material go?

It goes in the bone marrow. It ends up in the liver, in the kidney, in the spleen, in the digestive tract, and other organs of the body.

[Next slide.] To substantiate some of the rationale for the use of this material, the proponents of this technique have used various studies.

Allow me to illustrate one for emphasis.

An animal experiment was done on one dog. Based upon what was found on this single animal, conclusions were made and therefore treatments were recommended.

On the other hand, when a number of other studies were done which showed contradictory results and showed the harmful effects of this material, then the comment was made "that direct conclusions concerning human conditions cannot be drawn from preliminary animal studies."

I suggest you cannot have it both ways. Either we believe in studies and scientific investigations or we do not.

[Next slide.] This is what really shocks me most of all. In two different documents by the American Endodontic Society, there is the following information: "Today enough material is available to assess the method directly on the highest experimental animal, man." And, again, "Animal studies are of no purpose as both material and technique have already been successfully applied on the ultimate experimental animal, man."

I suggest that the Food and Drug Administration takes a dim view of people who like to perform treatment on the ultimate experimental animal. We will consider that in just a moment.

[Next slide.] It is stated by the proponents of this technique that under certain conditions it is OK to pass this material beyond the end of the root because it can cause no harm.

[Next slide.] Let us consider that statement right out of Dr. Sargenti's book itself. It states, and this photograph is right from his book, that in treating gangrenous teeth a small quantity of this material may be overfilled. It shows it beyond the end of the root, just like that biopsy which was submitted for toxicological analysis also showed.

[Next slide.] Then the literature by the proponents of this material state that a small quantity of this material extruded into this area stimulates the healing of the pathologically changed structures.

[Next slide.] There is additional information which they presented recently which points out that even gross accidental overfilling of the N2 pastes, whether intentional or accidental, is of no consequence because no significant hazard can occur.

[Next slide.] Let us consider exactly what can happen when this material is forced beyond the end of the root.

Very harmful effects can occur, for example, when this material goes beyond the end of the root and is absorbed in and around the sinus area. Where does it go? I suggest that it goes to the liver, to the kidneys, to the spleen, to the bone marrow, and to the digestive tract, and throughout our bodies, and that is the area of our concern.

[Next slide.] There were several papers published, but I will summarize them briefly. One was by Dr. Hans Orlay, where he pointed out that this material, when intentionally or unintentionally is forced beyond the end of the root, causes what is called parasthesia, which is numbness of the jaw.

The material was absorbed but the tooth had to be extracted. The material was absorbed, but the patient had parasthesia 6 months later.

[Next slide.] He showed another incident where it ended up in the sinus of another patient, and it required a surgical procedure in order to remove that material.

[Series of slides.] Dr. Ehrmann from Australia published a paper several years ago where he, too, showed this material was forced beyond the end of the root and, not by coincidence, it ended up in the main nerve canal in the lower jaw, the mandibular canal. That caused once again this parasthesia, which is a sensation of numbness in the lower jaw. That patient had that for many months, and I do not know that it has ever cleared up. [Next slide.]

It has been suggested to all dentists that everyone should be using N2 paste because, after all, everyone is using it and why should you be the last on the block not to use it.

These are the alleged statements.

[Next slide.] Let me illustrate. "Today it may be said without being contradicted that the N2 method represents one of the most widely used endodontic treatments in the world."

[Next slide.] I would like to point out what Dr. Ostby had to say about this material. On the basis of analysis by the Commonwealth Bureau of Standards, the material was banned in Australia. It was outlawed in Norway. The material is forbidden in Sweden.

[Next slide.] Ironically enough, this material was even prohibited from use in Dr. Sargenti's own country, Switzerland.

For example, this is a letter from the dean of the University of Switzerland in Berne, where he points out that the use of this material is not advocated nor taught in any of the country's four dental schools.

[Next slide.] The Australian Dental Association, on the bottom line and magnified on the right, states "This product is therefore declared a prohibited import under the above position of the Therapeutic Substances Act."

[Next slide.] New York City has begun the process of prohibiting the use of this material by the dentists in the foster child program, for example.

Recently the proponents of this material say "As a matter of fact, the material recommended for use by our society is not N2." They state that it is not N2. I suggest that whether we call it N2 or RC2A or RC2B or RETB, to quote Gertrude Stein, "a rose, is a rose, is a rose; by any other name it smells just as sweet."

[Next slide.] The statement has been made by the proponents of this material that dentists using this technique may be subject to litigation since this drug has not been approved by the FDA. It should say the American Dental Association.

In the reply of the American Endodontic Society, it states that the "Council on Dental Therapeutics of the ADA has stated that this material is not within their purview, and as such has not been granted either approval or disapproval."

[Next slide.] Let us examine the facts. In May of 1962 the Journal of the American Dental Association specifically stated in a major paper that this material is considered to be in category group D, and that means unacceptable to the dental community.

[Next slide.] The material in any formulation cannot be found in the "Physicians' Desk Reference." On the other hand, this N2 material can be found in "Accepted Dental Therapeutics." It is listed on page 13 under "Group D, Unacceptable."

[Next slide.] In our State, California, the Journal of the California Dental Association specifically cautioned dentists about the use of this material, mentioning a memorandum that was mailed out by the Food and Drug Administration in April of 1974.

Dr. Margaret Clark recently sent a letter to a patient involved in litigation regarding N2. She points out to the patient that dentists who use this material, whether compounded by a pharmacist or a small manufacturer, must assume full responsibility for any adverse reaction. She reemphasizes that the material is not approved.

[Next slide.] Let me illustrate some examples of what can happen with the use of this material.

On the left, this material was intentionally or unintentionally forced beyond the end of the root and it ended up right down here in the main nerve canal of this patient's jaw.

Of course, the tooth had to be removed. The material remains behind in that patient's jaw. That patient at this time regrettably suffers from once again what is called parasthesia, which is numbness of the jaw.

I cannot provide more specific information on this case, only because this case is being adjudicated right now in southern California.

Let me give you another illustration if I may. [Next slide.] This was an 8-year-old girl where N2 material, once again, was forced beyond the root. When it went beyond the end of the root, it ended up in the lower jaw.

Of course, the tooth had to be extracted and, once again, here are remnants of the N2 material right here after the tooth was removed on an 8-year-old girl.

What will happen to this girl? In some respects, she remains a dental cripple for the rest of her life.

[Next slide.] I just received this case the day I left for this particular meeting. This is a case that happened in San Diego, where, on the right, it shows the material being forced beyond and, actually, not even into the root. This can happen under other conditions, but this dentist unfortunately used this N2 material and it ended up in the lower jaw and around the main nerve canal. As a result, this patient has had two experiences: The first experience is that this patient had intractable pain that cannot be controlled even by narcotic preparations; the second experience that this patient has is parasthesia.

[Next slide.] What would happen, for example, if conventional pastes were used? What would happen if it ended up in the lower jaw, the main nerve canal? That is exactly what happened here. It ended up in the lower jaw with the conventional paste and this patient experienced no discomfort or pain. The patient did not even know about it even though, as a part of California law, the patient was informed about it nevertheless.

[Next slide.] When conventional pastes are used, as shown on the left, even when forced beyond the end of the root, the material is absorbed quickly and harmlessly.

[Next slide.] There are a couple of bizarre cases which happened recently in California. On the left there is the case where the N2 material was forced beyond the end of a root and, regrettably, this patient ended up with a cleft palate. That is what the suit is all about.

On the right, there was a case, bizarre though it may be, where the N2 material was associated as one of the proximate causes of death.

[Next slide.] This material has been categorized by California recently, by the California Food and Drug Administration, as functionally embargoed.

I recently heard from the attorney general's office, the assistant attorney general, the day I left for this meeting and it was pointed out that the Department of Justice in California has ruled that this material in California may not even be compounded by pharmacists for an individual dentist for an individual patient under any conditions. If that should happen it violates three separate laws.

[Next slide.] One of your colleagues, Representative Gude from Maryland, has been urging the Food and Drug Administration to ban immediately the use of this material.

[Next slide.] After all else is said and done, I would like to quote from the Hippocratic oath where it states in the original Latin, "Prima non nocere," which means, "If nothing else, let us just be sure that we do not hurt people."

Thank you very much, Mr. Chairman.

Mr. FOUNTAIN. Thank you very much, Dr. Cohen.

Without objection, Dr. Cohen's prepared statement will be inserted in the record.

[Dr. Cohen's curriculum vitae and prepared statement follow:]

CURRICULUM VITAE OF STEPHEN COHEN

PERSONAL DATA

Date of birth : September 23, 1938.
 Place of birth : New York City.
 Social Security No. : 057-32-5393.
 Marital Status : Married (Sandra Cohen).
 Children : Aaron Scott Cohen, born 8/25/65 ; and Kevin Bradley Cohen, 1/10/75.
 Private Practice Addresses : 450 Sutter St. No. 2510, San Francisco, Calif. 94108, (415) 391-8333 ; 920 Northgate Dr., Terra Linda, Calif. 94903, (415) 479-6444 ; and home address : 25 Meadowhill, Tiburon, Calif. 94120, (415) 435-0525.

EDUCATION AND HONORS

B.A. New York University, 1959 ; M.A. Indiana University, 1961 ; D.D.S. Indiana University, 1965 ; Two-year endodontic post-graduate program, University of Pennsylvania, 1965-66, 1968-69.

Outstanding Endodontic Student, Indiana University—C. V. Mosby Award, 1965.

First prize for endodontic research, Block Drug Co. Award, 1965.

MILITARY RECORD

U.S. Army, April 1966-68 ; Chief of Endodontics, Ireland Army Hospital 1966-68 ; Director of Endodontic program for dental interns and general dental residents, Ireland Army Hospital 1966-68.

PROFESSIONAL PRACTICE RECORD

Philadelphia—1965-66 ; New York City and Hempstead, Long Island—1968-69 ; San Francisco and Terra Linda—1969-present.

TEACHING EXPERIENCE

Chairman and Associate Professor, Endodontic Department, University of the Pacific, School of Dentistry—1974-present.

Chairman and Assistant Professor, Endodontic Department, University of the Pacific, School of Dentistry—1970-1974.

Chief of Endodontics, Mt. Zion Hospital, San Francisco—1971-present.

PUBLICATIONS

Etiology, Diagnosis and Treatment of the Dental Manifestations of Vitamin D Resistant Rickets: A Literature Review and Case History, JADA Publication pending 1975.

Textbook "Pathways of the Pulp", C. V. Mosby (pending Summer 1976).

A self-administered Endodontic Quiz. Jour. Calif. Dent. Assn., Sept. 1975.

The Sequelae of Accidentally Injecting Sodium Hypochlorite Beyond the Root Apex: A Literature Review and Case History: J. Oral Surg.; Oral Med.; Oral Path., 38:633, 1974.

Letter to Editor: "In Vitro and In Vivo Studies on a Composite Resin for the Repair of Incisal Fractures, Jour. Calif. Dental. Assoc., December 1973.

Letters to Editor: "Expanded Duties Proposal", Composite, June 1973.

Bleaching Tetracycline-Stained Vital Teeth, Jour. Oral Surgery, Oral Med., Oral Path., 29:465, 1970.

The Effects of Acids, Alkalis and Chelating Agents on Dentin Permeability, Jour. Oral Surgery, Oral Med., Oral Path., 29:631, 1970.

The Permanent Internal Splint for a Fractured Incisor Root, D. Digest, 74:162, 1968.

A Simplified Method for Bleaching Discolored Teeth, D. Digest, 74:301, 1968.

Treatment of the Discolored Teeth, J. Indpls., D. Soc., 19:12, 1965.

CONSULTANT

Letterman General Hospital, Presidio, San Francisco, Calif.—1970; Veterans' Administration Hospitals, Palo Alto, Calif., Menlo Park, Calif.—1970-present; Oaknoll Naval Hospital, Oakland, Calif.—1971-present; and, Travis Air Force Base, Calif.—1974-present.

POSTGRADUATE AND CONTINUING EDUCATION PRESENTATIONS

Conquering Innerspace—University of the Pacific School of Dentistry, San Francisco—1975.

Analysis of the Sargenti (N-2) Method: Material-Technique and Dental-Legal Implications: Maryland State Dental Association—1975; Suffoc County Dental Society—1975; UCLA—1975; University of Pennsylvania—1975; Alpha Omega. Vancouver, B.C.—1975; Napa-Solano Dental Society—1975; St. Francis Hospital, Honolulu, Hawaii—1974; and University of the Pacific School of Dentistry, San Francisco—1974.

Structure and Management of a Corporate Group Endodontic Practice: University of Southern California—1974—Northern California Academy of Endodontics—1974.

One Visit Complete Endodontic Treatment and Endodontic Surgery for Restored Teeth, Mexico City, Mexico—1973.

Full Day Course in Endodontics, Chico, Calif.—1973.

One Visit Complete Endodontic Treatment: Fresno County Dental Society—1973; Stanislaus County Dental Society—1973; and Marysville and Tulare County Dental.

One Visit Complete Endodontic Treatment on Anterior and Posterior Teeth, Endodontic Surgery for Restored Teeth and Dowel Preparations, Kullima, Oahu, Hawaii—1972.

Endodontic Armamentarium-Sterilization Procedures and Clinical Application, 76th Annual Scientific Meeting, University of California, School of Dentistry—1972.

Endodontic Implants, Hebrew University, Jerusalem, Israel—1971.

Endodontic Surgery: Tel-Aviv Endodontic Study Club, Israel—1971 and Israeli Dental Association—1971.

"Endo-Perio Lesion," Letterman General Hospital—1971.

Advanced Endodontics, University of the Pacific, School of Dentistry, San Francisco—1971.

"Endo-Perio Lesion," Letterman General Hospital—1970.

Advanced Endodontics, University of California, San Francisco—1970.

Endodontic Surgery, California Dental Association Meeting—1970.

Permanent Internal Splint for a Fractured Incisor Root: California Dental Association Meeting—1970; National Convention of American Association of Endodontists in St. Louis—1967.

MEMBERSHIP

Diplomate, American Board of Endodontics; Fellow, International College of Dentists; American Association of Endodontists; Northern California Academy of Endodontics; American Academy of Oral Medicine; Sigma Xi (Honorary Science); Past-President, Alpha Omega, Bay Area Chapter; American Dental Association; California State Dental Association; San Francisco Dental Society; American Association of University Professors; and the Federation Dentaire Internationale.

PREPARED STATEMENT OF STEPHEN COHEN, D.D.S., UNIVERSITY OF THE PACIFIC

The concept of using formaldehyde-type pastes for filling root canals dates back to the last century. The theory and concept of using formaldehyde containing pastes fell into disrepute as more scientific investigations demonstrated the potential deleterious effects of these pastes.

Dr. Angelo Sargenti of Switzerland resurrected the concept of using formaldehyde-containing pastes for filling root canals.

Because the formaldehyde "fixed" ("Mummified") the tissue around the root end and the corticosteroids masked the true biological reaction, the concept enjoyed temporary popularity amongst the dentists who did not understand the full implication of using these materials.

The compounds of "N-2" type pastes (R-C, RC-2A, RC-2B, RET-B, etc.) contain certain ingredients which are potentially harmful when brought in contact with the tissues that surround roots.¹

These "N-2" type compounds are not always safe or effective, even when used in accordance with "directions." The "directions"—as stated by Dr. Angelo Sargenti (the "inventor" of this material)—recommend overfilling some root canals (i.e., forcing "N-2" paste beyond the end of the root).² As presently sold by small manufacturers, no dosage or directions for usage are given. Nor is there any warning of complications, side-effects, or potential harmful sequelae.

The potential for harm to humans, when root canals are intentionally or inadvertently overfilled with "N-2" paste is dramatic. There is ample documentation to show that amongst the untoward signs and symptoms that may develop when root canals are overfilled with "N-2" pastes are parasthesia (i.e., numbness of the jaw)³ and developing oral-antral communication (i.e., acquired cleft palate).⁴ Bizarre though it may be, there was a case where "N-2" paste may have been the proximate cause of death.⁵

Additionally, there is compelling experimental evidence to show that the heavy metal compounds of lead and mercury, which are found in all compounds of "N-2", may be deposited in remote sites, such as the liver, spleen, kidneys and bone marrow when root canals are overfilled.⁶

Present scientific evidence demonstrates that formaldehyde—which is also found in all "N-2" compounds, causes biologic insults to bone and surrounding soft tissues.⁷

Although these "N-2" pastes have been banned in several countries, are listed as Group "D" (Unacceptable) in the 35th Edition of Accepted Dental Therapeutics,⁸ and are listed as "non-approved" by the Federal Food and Drug Administration,⁹ a substantial number of dentists in the United States continue to use these drugs.

¹ See exhibit A.

² See exhibit B.

³ See exhibit C.

⁴ See exhibit D.

⁵ See exhibit E.

⁶ See exhibit F.

⁷ See exhibit G.

⁸ See exhibit H.

⁹ See exhibit I.

Because most State and Federal agencies have been reluctant or indifferent to exercise control over the manufacture and distribution of these "N-2" pastes by small manufacturers, "quality control" appears to be lacking. As a result, there are a number of biopsy specimens to show that the percentage of lead and formaldehyde compounds is astonishingly higher than the percentages shown on the pre-printed prescription forms.¹⁰

To the best of my knowledge, there is no endodontic department, dental school or reputable dental institution in the United States that advocates the use of "N-2" pastes for endodontic (root canal) therapy.¹¹

Based on the aforesaid experimental studies, microscopic experimentations, toxicologic analyses and clinical case reports, I am of the opinion that "N-2" pastes have not been established to be safe and effective, a prerequisite to FDA approval.

Presently, California prohibits these "N-2" type drugs from being manufactured or distributed by commercial companies.¹² Additionally, the California Dental Association has notified its member dentists of the position of Federal and State drug agencies regarding the use of "N-2".¹³ Dr. James Hull, director of the Nebraska Division of Dental Health, has sent letters to every dentist in the State, cautioning them about the potential harmful effects of "N-2" pastes.¹⁴

In my communication with the Federal Food and Drug Administration, there appears to be an understanding of the problems relating to the easy manufacture and abuse of this non-approved drug; nevertheless, to date, there has been no enforcement or compliance action.

In consideration of the scientific evidence which strongly suggests the potentially harmful effects of this drug, I believe its continued usage constitutes an imminent health hazard. There are generally and widely accepted alternatives for root canal treatment that are readily available to the general public which can provide excellent, predictable results with minimal risk and considerable benefit. Accordingly, I believe the Federal Food and Drug Administration should fulfill its mandated regulatory function by obtaining injunctions against the manufacture and distribution of "N-2" pastes and publish in the Federal Register warning notices against future shipments of this drug.

Mr. FOUNTAIN. I want to thank all of you gentlemen for your presentations. Perhaps in light of so many things in the country today, I should say courageous, as well as helpful, statements.

Before we begin the questioning period, I would like to place in the record several documents which have a bearing on the testimony of Dr. Martin.

Dr. Martin referred to his visit to Congressman Gude's office, and I am placing into the record a copy of the letter that Congressman Gude sent to FDA as well as a copy of his October 10, 1975, press release in which he urged the FDA, and I quote from page 2 of the release; "* * * to immediately impose a ban on any further dissemination of this substance until such time as its safety and effectiveness can be demonstrated."

I might add that Congressman Gude is a member of our Government Operations Committee.

[The documents referred to follow:]

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
Washington, D.C., October 2, 1975.

Dr. ALEXANDER M. SCHMIDT,
Commissioner, Food and Drug Administration,
Rockville, Md.

DEAR COMMISSIONER SCHMIDT: It has recently come to my attention that a substance utilized in endodontics referred to as "N2" has never received ap-

¹⁰ See exhibit J.

¹¹ See exhibit K.

¹² See exhibit L.

¹³ See exhibit M.

¹⁴ See exhibit N.

proval from the Bureau of Drugs, but that it is being distributed throughout the country through a "prescription order" system. No action has been taken by the FDA to approve or ban this substance or to take other appropriate action in order to protect the health of our citizens who may be treated with this particular drug.

I understand that the manufacturers of N2 submitted an application for new drug status in 1962, but that they withdrew their application in 1969 prior to receiving FDA approval because they were unable to furnish the Administration with sufficient scientific evidence to prove that the drug was safe for its intended use. Since that time, the supporters of the drug have been providing this material to individual practitioners through the use of "order blanks" by which the drug is compounded by pharmacists and mailed interstate for use by a particular dentist. Oftentimes, these orders are of sufficient quantity to treat several patients, and not just one individual, according to information which I have received. Furthermore, in a letter dated November 1, 1972 by Dr. Ronald R. Scherzberg, Assistant to the Director, Division of Regulatory Operations, Office of Compliance, it was stated that "(i)f the formulation listed on the pre-printed prescription form is not generally recognized as safe and effective for its intended uses, we would consider the preparation subject to new drug clearance procedures."

Serious question has been raised by the dental community in recent years concerning the safety of N2, and this information was brought to the attention of the FDA in January of this year. The information included articles from professional publications and letters from almost 30 of the nation's dental schools, as well as several foreign dental associations, indicating that the compound, as well as the Sargenti technique, are subject to serious question relative to safety.

Included in the materials was an indication that N2 has been banned in Norway, Sweden and Australia, and that the material has been embargoed in California.

I understand that members of the Bureau staff have recommended that N2 be banned *immediately*, but that other members of the staff would prefer to subject N2 to the entire review process, feeling that there is insufficient information to properly evaluate the safety of the drug.

It has now been nine months since material was formally presented to the FDA which indicated that the vast majority of the dental community believed that N2 was not a safe drug. This belief was based on scientific evidence to a very large degree, and has been acted upon in several foreign countries to ban N2 from the marketplace. To date, FDA has not made a decision on this potentially deleterious substance.

I strongly urge you to *immediately* impose a ban on any further dissemination of this substance, until such time as its safety and effectiveness can be demonstrated. I believe that the FDA owes it to the American public, as well as to the dental profession and the drug's supporters, to act with more swiftness than has thus far been apparent in resolving this entire dispute.

I look forward to your response to both the issue of the safety of N2, as well as the reasons for the delay in making a final determination on this matter.

Sincerely,

(Signed) GILBERT GUDE.

NEWS RELEASE FROM CONGRESSMAN GILBERT GUDE

Congressman Gilbert Gude, R-Md., has asked the Food and Drug Administration and the State of Maryland to ban the use of a compound called "N2" which is currently in use in dental root canal procedures, pending proof of its safety.

"Serious question has been raised by the dental community in recent years concerning the safety of N2, and this information was brought to the attention of FDA in January of this year," Gude said.

"The information included articles from professional publications and letters from almost 30 of the nation's dental schools, as well as several foreign dental associations, indicating that the compound, as well as the Sargenti technique (in which it is used) are subject to serious question relative to safety."

Gude said "N2" has been banned in Norway, Sweden and Australia, and has been embargoed in California.

Gude said the compound has not been approved by FDA but is already in wide use. Supporters of the compound, Gude said, have been able to skirt this lack of approval by distributing to individual practitioners "order blanks" by which the

practitioners can have a pharmacist make up the compound and mail it to them interstate.

Root canal procedures are undertaken to remove the pulp, or root, of a tooth when it, the root, has become so damaged by decay or poor circulation that, if left untended, bacterial infection and abscessing would result, leading to the loss of the entire tooth.

In the standard procedure, a lengthily trained dental specialist called an endodontist drills a hole in the crown of the tooth and removes the dead pulp with various small instruments specially designed to get into the narrowing, winding canals. The spaces are then filled with a gummy material and a sealer. A synthetic cap or crown is then fitted.

The root canal for a single tooth may cost up to \$250, with the crown costing perhaps an additional \$150.

The Sargenti technique, devised and named after a Swiss dentist, uses motorized devices. The root canal is then filled with a special paste under the name of N2 or other trade names. The paste may contain compounds of lead and mercury along with steroid hormones and paraformaldehyde which are supposed to sterilize and protect the root canal against bacterial growth. Critics, however, say the toxic compounds pose a hazard if they leak from the root canal and that paraformaldehyde is highly damaging to tissues.

Thus, although the Sargenti treatment may be completed in just one visit and costs under \$100 (plus the cost of the crown) some experts have reported serious damage to oral tissues and bone. One woman has charged that the treatment dissolved a part of her palate, requiring plastic surgery.

Gude wrote Dr. Richard Crout, director of FDA's Bureau of Drugs, "I understand that the manufacturers of N2 submitted an application for new drug status in 1962, but that they withdrew their application in 1969 because they were unable to furnish FDA with sufficient scientific evidence to prove that the drug was safe for its intended use.

"Since that time, the supporters of the drug have been providing this material to individual practitioners through the use of 'order blanks' by which the drug is compounded by pharmacists and mailed interstate for use by a particular dentist . . .

"Serious question has been raised by the dental community in recent years concerning the safety of N2 and this information was brought to the attention of FDA in January of this year. It has now been nine months since the material was formally presented to FDA which indicated that the vast majority of the dental community believed that N2 was not a safe drug.

"I understand that members of the Bureau staff have recommended that N2 be banned immediately, but that other members of the staff would prefer to subject N2 to the entire review process, feeling that there is insufficient information to properly evaluate the safety of the drug.

"I strongly urge you to immediately impose a ban on any further dissemination of this substance until such time as its safety and effectiveness can be demonstrated."

The information on N2 was also referred by Congressman Gude to Dr. Neil Solomon, Maryland Secretary of Health and Mental Hygiene, asking for a Maryland ban of N2.

Mr. FOUNTAIN. Dr. Martin also testified concerning his visit to the offices of FDA in January of 1975 in Rockville. In that connection I am placing in the record a copy of a January 7, 1975, memorandum of conference between Dr. Martin, who was accompanied by Dr. Siskin, an endodontist from the University of Tennessee, and FDA representatives. The copy of the memorandum was obtained from FDA.

Dr. Martin, in your statement you did not mention that anyone accompanied you when you visited FDA in January of 1975.

Were you accompanied by Dr. Siskin?

Dr. MARTIN. Yes. I think I did mention that I was accompanied by Dr. Siskin on page 4.

Mr. FOUNTAIN. Yes, I must have missed that.

[The memorandum referred to follows:]

MEMORANDUM OF CONFERENCE

(Conference Room H, 10 a.m., Tuesday, January 7, 1975)

Subject: Dr. Sargenti's N2 formula. Between: Dr. Howard Martin, DMD (an Endodontist in Maryland); Dr. Siskin (an Endodontist from the University of Tennessee) and Margaret Clark, M.D., HFD-160; Clarence Gilkes, D.D.S., HFD-160; George Wade, D.D.S., HFD-160; Joseph Renna, D.D.S., HFD-160; Gary Boyer, CSO, HFD-160; Dr. Kelsey, HFD-308; Dr. Carr, HFD-107; Robert Wetherell, HFL-1; Al Lavender, HFD-38; and Richard Chatseway [Chastonay], HFD-38.

Dr. Gilkes cited some of the deficiencies in the NDA submission for N2 and said that basically there was insufficient information to demonstrate safety and efficacy for the product, and the NDA was withdrawn by the sponsor after they had been informed of the deficiencies.

Dr. Martin stated that the claims presently being made are very misleading and asked "if the product was withdrawn, can the material be banned or can it still be compounded." He stated that the formula has been changed several times and that Dr. Sargenti claims that there is no lead pick-up. Dr. Martin then cited studies by Dr. Grossman which showed lead pick-up (in monkeys), and by Drs. Oswald and Cohen lead pick-up by bone, liver and spleen after N2 treatment of Rat canine teeth.

Dr. Martin then mentioned that every dentist in the state of Maryland has received information from the N2 people that there has been no blood levels of lead and no lead pick-up and this information was in error.

Dr. Gilkes replied that he (Dr. Martin) was asking DSDDP to ban the drug—he explained that this Division only evaluates data and that maybe Compliance could take some action.

Mr. Lavender, from Compliance, requested that if they have any data which shows adverse effects to send it down to them to show that there is a basis for them to take action and they would do so.

Dr. Kelsey asked where the material is being made. Dr. Martin explained that it could be obtained several ways, that is the N2 Society will send the dentist the formula, and there are pharmacies that will formulate the product.

Mr. Boyer observed that they are sending the prescription through the mail.

Compliance explained that one should separate out the pharmacist in his practice and it is *not* illegal to fill a prescription.

Dr. Martin stated that it was his understanding that no drug could be shipped without FDA approval and asked what the present situation is. He said that it was his understanding that if the formulation is changed, the product becomes a new drug.

Compliance, (Mr. Lavender) answered that we can call it a New Drug by definition and he gave an explanation of what comprises a New Drug by definition (in terms of new claims which are being made).

Dr. Martin then asked what N2 would be called in this situation. The answer was a new drug.

The subject of "experts" was then discussed and the claim made by the N2 proponents that they have many experts who say that the product is safe and efficacious and that they say they have many "experts" to back them up.

Dr. Gilkes observed that to date, nobody has offered to volunteer as experts for FDA to testify against the product with good evidence.

Dr. Martin said that they have evidence such as toxicity studies and animal studies. He added that they do not have a vested interest in the product. He said that they have cited foreign studies to show the danger of the product to humans and that he has attempted to put all of this together to show its deleterious effect when compared to the "usual" root canal filling material.

He mentioned that the American Association of Endodontists is considering placing a warning in their publications to warn pharmacists against making the product for use by Dentists.

Dr. Martin said that they would supply information which we could use to move against the product.

Dr. Kelsey said that she could not understand how they could continue to ship the product after they had withdrawn their NDA and she was also concerned with the lead content.

Dr. Martin asked Dr. Wade: When you do a Root Canal and it expresses out through the apex—how can you say that it does not reach vital tissue?

Dr. Gilkes asked them to submit the data that they had talked about.

Dr. Kelsey said that foreign studies could also be submitted.

Dr. Martin mentioned a letter to the Navy regarding N2 from Dr. Gilkes which resulted in the Chief of Endodontics taking action against the N2 product in the form of a letter to the entire Dental Corps telling all Dentists NOT to use the N2 products.

Dr. Gilkes explained that this was merely a standard N2 letter of which we send out at least a dozen each month. This merely states that, from a Regulatory view, they are in violation of the Act.

Dr. Martin showed several pages of news clippings on N2, and Dr. Siskin explained that what has been done has been on an emotional "gut" level and what they want to see now is an open demonstration of safety and efficacy. There are a lot of products in root canal therapy which are archaic and these included eugenol. He emphasized that an individual like Dr. Sargenti should not be allowed to speak half truths as he is a very convincing speaker who mixes "practice" along with the drug.

Dr. Siskin mentioned that he has (in "Angelo's" own handwriting) the statement that the formulations have been changed 25 times and that they have been changed 5 times in the last 18 months. That before 1972, they did not have lead in the product and they keep on making changes as new problems arise.

Dr. Martin mentioned a debate between Dr. Sargenti and other men from Sweden and the University of Buffalo which was held to give the Sargenti product a fair hearing. He said that Sargenti had gotten upset with the other men, and that he only had four teeth, which he shows as examples. Sargenti, at one point, had said that Dr. Grossman was in favor of N2 and Grossman had answered that he did not use the product and requested that they not use his name in connection with it.

Dr. Martin estimated that there are about 5 men who are the main speakers who promote the N2 method and product. He said that they advertise freely and that compliance should do something about it. Their 1973 Newsletter said that they had new clinical material (but that they had never published it or distributed it).

Dr. Siskin said he is opposing the N2 proponents on the ethical/professional basis.

Dr. Gilkes asked if they had any formulations which their endodontists use that compare to the N2 product.

Dr. Martin replied that what Sargenti uses is a liquid composed of eugenol and zinc oxide with resin plus rose oil in the eugenol to cover the odor. That is what is being used as a modification of ZOE plus an opaquer, (they have used precipitated silver in the past) they also have used bismuth subnitrate in place of silver and some accelerators.

He talked about several products including a filler by Dr. Grossman which had been in trouble and was discontinued and a product "stabilite" which is in short supply because it is also used in bubble gum manufacture (Hercules Corp. of Delaware makes it).

Dr. Kelsey asked if they have any documentation of patients having trouble because of N2 root canal fillings in their mouths.

Dr. Martin replied that these reports would not be of any value without a comparison product.

Dr. Kelsey asked if he would be willing to run a comparison study. Dr. Martin replied that he would not, as it (N2) may not be of any value to the patient and she would have to get someone who believed in the N2 method.

Dr. Siskin then showed some slides and mentioned that there were two important problems with N2 and that these were (1) the formalin which embalms the tissue will in turn eventually break down in the tissue; but, in the meantime, there is no evidence in the X-ray to give a warning and (2) the lead which is a protoplasmic poison.

Formulations which were mentioned were: Formocresol used in predodontia root canals; OXAPARA containing bismuth sulfate; iodine; paraformaldehyde; formalin; phenol and Creosote.

He showed slides of N2 Regular and N2 Powder and a May, 1972 ADA Journal Article which contained an N2 formulation; N2 Medical Labels; RC-2A Sargenti formula with Steroids and RC-2B Sargenti formula w/o Steroids. (Mr. Boyer mentioned some additional formulations contained in a paper by Jeffrey Foster).

It was explained to Drs. Martin and Siskin that the material must be evaluated objectively from both sides and that they should separate out the hard facts and

make their case on facts and issues—safety and efficacy. That what is required is a compilation of facts. The question is, do we have a basis on which to act. It was suggested that it may have to go out as a Federal Register Notice and that they may wish to consider having their Society write to the Commissioner with their data requesting him to take action against the product.

They said they would submit the data, (after screening and compiling), to Dr. Clark.

JOSEPH M. RENNA, D.D.S.

Mr. FOUNTAIN. I am also placing in the record a copy of a chronology of FDA correspondence involving N2 from 1961 to the present, prepared by FDA. It reflects FDA's consistent view that N2 is a new drug—from 1961 to the present.

I have here 10 or 12 pages listing all of the letters which have been written by FDA in response to inquiries from dentists and others all over the country. In practically all instances, except where some other information was required, they say N2 is a new drug.

[The document referred to follows:]

ABBREVIATIONS USED WITH THE N2 CHRONOLOGY

ACFC—Assistant Commissioner of Field Coordination.
 ACR—Assistant Commissioner for Regulations.
 ADA—American Dental Association.
 AES—American Endodontic Society.
 AMD—Assistant Medical Director.
 BD-160 (later HFD-160)—Division of Surgical-Dental Drug Products.
 BD-310 (later HFD-310)—Division of Drug Labeling Compliance.
 BE—Bureau of Enforcement.
 BEVC—Bureau of Education and Voluntary Compliance.
 BFA—Bureau of Field Administration.
 BM—Bureau of Medicine.
 CLO—Congressional Liaison Office.
 DACEI—Deputy Assistant Commissioner for Education and Information.
 DAR—Division of Administrative Review.
 DCG—Division of Case Guidance.
 DEN-DO—Denver District Office.
 DFO—Division of Field Operations.
 DND—Division of New Drugs.
 DRO—Division of Regulatory Operations.
 DRR—Division of Research and Reference.
 EIR—Establishment Inspection Report.
 HFD-300—Office of Compliance.
 HFO—Division of Federal-State Relations.
 LOS-DO—Los Angeles District Office.
 MIN-DO—Minneapolis District Office.
 NYK-DO—New York District Office.
 NOL-DO—New Orleans District Office.
 OLGS—Office of Legislative and Governmental Services.
 OLS—Office of Legislative Services.
 OND—Office of New Drugs.
 OSE—Office of Scientific Evaluation.
 PHI-DO—Philadelphia District Office.
 SAN-DO—San Francisco District Office.

CHRONOLOGY OF FDA CORRESPONDENCE INVOLVING N2 FROM 1961 TO THE PRESENT

Date	Type of correspondence	Brief description
1961		
Jan. 18	AMD memo to DAR.....	ADA complaint on N2.
Feb. 2	DAR assignment to NYK-DO.....	Investigate importing of N2 by AGSA and/or Ruthal, Inc., New York.
May 1	DAR memo to NYK-DO.....	N2 is a new drug.
	DAR letter to consumer.....	Do.

CHRONOLOGY OF FDA CORRESPONDENCE INVOLVING N2 FROM 1961 TO THE PRESENT—Continued

Date	Type of correspondence	Brief description
1961		
May 24	DAR letter to AGSA	Informed AGSA they may have appointment to discuss N2.
31	DND/AGSA telephone memo	AGSA said they have marketed N2 3 yr. Claimed 14 to 15,000 dentists use it.
June 12	DRR/BM memo to DAR/BE	Request to investigate R-method preparation being distributed by Pfingst & Co., New York.
20	BFA assignment to NYK-DO	Investigate Pfingst Co. for N2.
Aug. 25	BM/N2 proponent telephone conversation	New drug institute of New York requested N2 be released. Claimed 30,000 units have been used on 2 to 300,000 teeth for 3 yr on the U.S. market.
Sept. 6	BM letter to ADA	N2 is a new drug.
Oct. 26	BE letter to dentist	Do.
Nov. 7	do	Do.
28	do	Do.
Dec. 20	do	Do.
22	do	Do.
1962		
Jan. 19	BM letter to Pfingst Co.	Given opportunity to discuss N2.
Feb. 12	BFA assignment to NYK-DO	Investigate AGSA & Ruthal for N2.
14	DRR memo to DND	ADA has stated that paraformaldehyde hazardous if forced through apex.
26	BE letter to dentist	N2 is a new drug.
Mar. 14	do	Do.
Apr. 13	BE letter to Krause Dental Supply	Do.
	FTC/FDA telephone conversation	Do.
	BE letter to dentist	Do.
17	do	Do.
25	do	Do.
26	do	Do.
May 7	do	Do.
8	BE/dentist telephone conversation	Do.
10	BE letter to dentist	Do.
15	do	Do.
18	BE/dentist telephone conversation	Do.
21	BE letter to consumer	Do.
23	BE letter to dentist	Do.
June 7	BE letter to attorney	Do.
18	AGSA letter to OND	NDA (13-670) submission for N2.
26	BE letter to dentist	N2 new drug.
	NYK-DO EIR to BFA	District told AGSA N2 new drug. AGSA has been distributing it for 2 yr. Firm told drug would be detained.
Sept. 4	BE letter to dentist	N2 is a new drug.
6	BE letter to attorney	Do.
Oct. 21	BE letter to dentist	Do.
Nov. 21	do	Do.
Dec. 3	do	Do.
11	do	Do.
1963		
Jan. 28	do	Do.
Mar. 11	BE letter to consumer	Do.
25	BE letter to dentist	Do.
Apr. 15	do	Do.
May 9	BE/dentist telephone conversation	FDA informed R method preparation being made by Riebler BisIngen Hohentollern, West Germany, and shipped to Pfingst & Co., New York.
15	BE letter to State Board, Rhode Island	N2 is a new drug.
June 7	DND/AGSA conference	AGSA requested N2 be declared NND (not new drug). Said another firm Sultan Pharmacy, New Jersey, was marketing a similar product.
10	BE letter to dentist	N2 is a new drug.
24	do	Do.
July 11	do	Do.
	Commissioner letter to Congressman Case	Do.
17	CLO/BE telephone memo	Do.
	BE letter to AES	Do.
18	BE letter to dentist	Do.
No date	do	Do.
Aug. 12	do	Do.
14	do	Do.
19	do	Do.
Sept. 9	DND/attorney telephone memo	Do.
10	BE letter to dentist	Do.
13	BE letter to consumer	Do.
17	BE letter to dentist	Do.
Oct. 1	do	Do.
Nov. 29	do	Do.
Dec. 5	do	Do.

CHRONOLOGY OF FDA CORRESPONDENCE INVOLVING N2 FROM 1961 TO THE PRESENT—Continued

Date	Type of correspondence	Brief description
1964		
Jan. 9	BE letter to dentist.....	N2 is a new drug.
Mar. 3	AGSA/ACR telephone memo.....	AGSA questioned new drug status for N2 and was referred to BM.
4	BEVC letter to dentist.....	N2 is a new drug.
10	BE letter to dentist.....	Do.
11	AGSA/DND telephone memo.....	Firm claimed 100-percent effectiveness in 110 cases.
13	DFO assignment to NYK-DO.....	Investigate Sultan Pharmacy in New Jersey, for N2 distribution.
July 1	DFO assignment NYK-DO.....	Investigate advertisement in New York State Dental Journal about availability of N2 through a dentist.
6	BM letter to Dr. Plattner, Switzerland.....	FOA requested evaluation of the N2 materials and method.
	BM letter to Dr. Nichells, London.....	Do.
	BM letter to Dr. Tormack, Canada.....	Do.
9	BM letter to Dr. Ingle.....	Do.
No date.	BM letter to Dr. Paynter.....	Do.
July 17	BM letter to Dr. Newton, Australia.....	Do.
27	BEVC letter to dentist.....	N2 is a new drug.
Oct. 21	do.....	Do.
Dec. 14	do.....	Do.
1965		
Mar. 29	BEVC letter to National Dental Supply.....	Do.
June 11	DND letter to AGSA.....	NDA is incomplete.
July 16	BEVC letter to Swedish firm.....	N2 is a new drug.
1966		
Oct. 24	BM assignment to MIN-DO.....	Investigate dentist using N2.
	BM letter to dentist.....	N2 is a new drug.
Dec. 27	do.....	Do.
1967		
Jan. 31	MIN-DO memo to BM.....	Dentist investigated for N2 usage. He is no longer using it and no sample was available.
Apr. 14	OND letter to AGSA.....	NDA is still incomplete.
May 10	do.....	Do.
12	BM letter to dentist.....	N2 is a new drug.
June 1	AGSA/FDA conference memo.....	Firm told what was needed for adequate submission.
20	OND letter to AGSA.....	NDA is still incomplete.
21	BM letter to dentist.....	N2 is a new drug and not a device.
July 20	AGSA letter to BM.....	Firm request NDA be withdrawn.
26	BM letter to dentist.....	N2 is a new drug.
Aug. 1	do.....	Do.
4	OND letter to AGSA.....	Acknowledges NDA withdrawal request.
	BM letter to dentist.....	N2 is a new drug.
23	do.....	Do.
28	do.....	Do.
Nov. 13	DCG memo to DEN-DO.....	Do.
1968		
Jan. 11	BM letter to dentist.....	Do.
Sept. 6	do.....	Do.
Oct. 4	DEL Labs., New York/DCG telephone.....	Do.
Nov. 7	DACEI letter to Senator Baker.....	Do.
	DACEI letter to Congressman Duncan.....	Do.
Dec. 3	BM letter to dentist.....	Do.
1969		
May 9	ACFC memo to PHI-DO.....	Investigate shipment of N2 to Dr. Arzt.
19	DCG assignment to PHI-DO.....	Do.
	PHI-DO memo to DCG.....	Dr. Arzt had N2 from 8 to 9 yr ago and was using it.
Aug. 22	OLGS letter to Senator Baker.....	N2 is a new drug.
Sept. 11	BD-160 letter to Dr. Werts.....	Do.
22	FDA/dentist conference.....	Told he needed IND to use N2.
Oct. 23	Dr. Werts letter to BD-160.....	Complaint about RCM (N2 type sealer).
Nov. 20	BD-160 letter to Dr. Werts.....	N2 is a new drug.
26	BM letter to Dr. Werts.....	Do.
1970		
July 15	BD-160 letter to Dr. Werts.....	N2 is still a new drug.
Sept. 8	BO-160 letter to AES.....	Told AES RCM complaint has been referred to FDA's Office of Compliance.
9	BD-160 memo to BD-310.....	RCM being distributed without an NDA.
Nov. 18	NYK-DO EIR BD-310.....	Ruthal was informed RCM new drug and they destroyed all they had on the spot.
1971		
Jan. 5	BD-310 memo to NYK-DO.....	RCM is similar to N2 and is new drug.
Feb. 26	BD-310/district TWX.....	Initiate voluntary recall on RCM.
June 21	BD-160 memo to BD-300.....	ADA complaint on import of N2.
July 9	BD-310 assignment to LOS-DO.....	Investigate Dr. Werts and AES for illegal import and promotion of N2.
Aug. 3	Import circular issued.....	Stated N2 type products are new drugs and should be detained.
17	LOS-DO memo to BD-160.....	Requested comments on planned distribution of N2 material at ADA meeting.
19	BD-160 memo to BD-310.....	Complaint about distribution of seminar brochures about N2 at ADA meeting.

CHRONOLOGY OF FDA CORRESPONDENCE INVOLVING N2 FROM 1961 TO THE PRESENT—Continued

Date	Type of correspondence	Brief description
1971		
Aug. 25	OSE letter to AES.....	Told them they could meet with FDA regarding their product Ciment Dentaire Canalaire.
27	DCG assignment to PHI-DO.....	Investigate Dr. Arzt for promotion of N2.
31	BD-310 memo to LOS-DO.....	Detain ciment dentaire canalaire as it is a new drug like N2.
Sept. 10	AES/DOE Conference memo.....	Explained why CDC is new drug.
21	Dr. Sargenti/FDA officials conference memo.....	Dr. Sargenti complained FDA is depriving American people of a very useful product in N2.
Oct. 6	BD-310 letter to Ruthal.....	Stop importing N2 as it is new drug.
27	BD-310 memo to BD-160.....	Requested a medical review of root canal sealers for possible class action.
	BD-310 letter to Arzt.....	Zoe root canal sealers have no NDA's and are marketed on a firm's own responsibility.
	BD-310 TWX LOS-DO.....	Initiate recall on ciment canalaire as it is a new drug.
29	LOS-DO TWX.....	Assigned class II recall to ciment canalaire.
Nov. 19	BD-160 memo to BD-310.....	Sealers are drugs some predate 1938 others are new such as PT.
1972		
Apr. 19	BD-47 letter to dentist.....	N2 is a new drug.
Oct. 16	OLS letter to dentist.....	Seminars deal with dental practice.
30	DRO letter to dentist.....	NS is a new drug.
Nov. 1	DRO letter to attorney.....	Preprinted RX blanks are considered orders for drugs.
Dec. 13	DRO memo to DEN-FO.....	N2 is a new drug.
1973		
Oct. 10	BD-160/NOL-DO telephone memo.....	Dentist uses N2 at his own risk.
24	LOS-DO memo to BD-300.....	AES recalled Ciment Canalaire; 10,504 bottles—7g; 4,959 bottles—8g.
Dec. 12	BD-160/SAN-DO telephone memo.....	N2 is a new drug.
1974		
Jan. 17	HFD-160 letter to attorney.....	Do.
Feb. 15	do.....	FDA has no jurisdiction over dental practice.
20	HFD-160 letter to dentist.....	Informed about FDA's use of advisory committees.
Mar. 18	DENT/HFD-160 telephone memo.....	Complaint about N2 promotion.
19	HFD-160 letter to dentist.....	N2 is a new drug.
26	do.....	Told to contact State Pharmacy Board about compounding a new drug.
	do.....	Do.
Apr. 2	HFD-300 letter to State Pharmacy Board, New York.....	N2 is a new drug.
	HFD-300 letter to State drug officials.....	Do.
11	HFD-160 letter to dentist.....	Do.
15	HFD-160 memo to HFD-300.....	Complaint about TDC Labs. distributing N2.
May 17	HFD-310 assignment to LOS-DO.....	Investigate TDC for N2 distribution.
22	do.....	Investigate Steri-Kem.
June 6	LOS-DO EIR on TDC.....	Out of business found Shar-Don Labs might be distributing N2.
11	HFD-160 memo to HFD-300.....	Steri-Kem.
25	LOS-DO EIR Shar-Don.....	Firm is distributing N2. District will establish interstate shipment.
July 9	HFD-160/DENT telephone memo.....	N2 new drug.
16	HFD-160 letter to consumer.....	Do.
19	HFD-160 letter to dentist.....	Do.
26	HFD-310 letter to dentist.....	Do.
Aug. 1	LOS-DO memo to HFD-316.....	Samples submitted from Steri-Kem.
9	do.....	Investigation revealed death not associated with N2.
15	OLS letter to Congressman Jones.....	Investigation did not show N2 caused death.
20	LOS-DO EIR Steri-Kem.....	Firm is distributing N2.
23	HFD-316 assignment to NYK-DO.....	Investigate Medidentia for N2 production.
Sept. 3	NYK-DO EIR Medidentia.....	No distribution of N2, but they make equipment for use with the technique.
4	HFD-160 letter to dentist.....	N2 is a new drug.
17	HFD-310/LOS-DO telephone memo.....	Asked district to obtain interstate shipment from Shar-Don.
16	OLS letter to Senator Bellmon.....	N2 has not been shown to be cause of death.
	OLS letter to Congressman Jones.....	Do.
23	HFD-160 letter to dentist.....	Told him N2 matter has been referred to Office of Compliance.
30	HFD-160/dentist telephone memo.....	N2 is a new drug.
Oct. 8	OLS letter to Dr. Martin.....	Do.
Nov. 5	HFD-310 letter to dentist.....	Do.
11	LOS-DO EIR Shar-Don.....	Interstate doc. was obtained for 1 sample.
15	OLS letter to dentist.....	N2 is a new drug.
19	HFD-160 letter to Navy Department.....	Do.
26	HFD-160 letter to dentist.....	Do.
Dec. 4	HFD-160 memo to HFD-300.....	Complaint of unsolicited promotion of N2.
	HFD-313/Dr. Martin telephone memo.....	Dr. Martin requested conference on N2.
11	HFD-310 letter to dentist.....	N2 is a new drug.
18	HFD-160 letter to dentist.....	Do.
20	HFD-160 letter to consumer.....	Do.
24	HFD-160 letter to dentist.....	Do.
	do.....	Do.
1975		
Jan. 7	FDA/Dr. Martin conference memo.....	Dr. Martin informed to submit S. & E. data to HFD-160 for evaluation.
14	HFD-310 memo to LOS-DO.....	Reviewed EIR's from Steri-Kem and Shar-Don and will hold regulatory action until Dr. Martin's submission is evaluated for S. & E.

CHRONOLOGY OF FDA CORRESPONDENCE INVOLVING N2 FROM 1961 TO THE PRESENT—Continued

Date	Type of correspondence	Brief description
1975		
Feb. 10	HFD-160 letter to dentist.....	Requested permission to publish HFD-160 letter of Dec. 18, 1974, to him. Referred to compliance.
Mar. 13	HFD-300 letter to dentist.....	Reviewed proposed paper on N2.
No date	HFD-160 letter to Steri-Kem.....	Informed what constitutes an adequate IND/NDA submission.
Mar. 5	HFD-160/dentist telephone memo.....	N2 is a new drug.
14	HFD-47 letter to consumer.....	Do.
25	HFD-160 letter to dentist.....	Do.
26	do.....	Do.
Apr. 8	do.....	Do.
10	do.....	Do.
23	do.....	Do.
30	HFD-313 memo to LOS-DO.....	Request investigation for adverse reaction report on N2.
No date	HFD-160/NOL-DO telephone memo.....	N2 is a new drug.
May 1	HFD-313 letter to dentist.....	OK to publish HFD-160's letter dated Dec. 18, 1974, on N2.
June 4	HFD-160 letter to dentist.....	N2 is a new drug.
13	HFD-310 memo to NYK-DO.....	Regulatory letter placed in temporary abeyance pending class action following a medical review.
18	HFD-160 letter to consumer.....	N2 is a new drug.
23	HFD-160 letter to AES.....	Do.
Aug. 5	HFD-310 Action memo to HFD-2.....	Gave options for proceeding on N2: (1) act now on N2, (2) Dental Advisory Committee and then act.
6	HFD-2 memo to HFD-310.....	Proceed with Option 2.
Sept. 11	KC-DO/HFD-160 telephone memo.....	N2 is a new drug.
15	HFD-310 memo to HFD-160.....	Forwarded the N2 material to HFD-160 for presentation to Dental Advisory Committee.
23	HFD-160/Congressman Gude's office telephone memo.	Told them it was compliance matter and referred him to HFD-2.
	HFD-160 memo to HFD-2.....	Recommended we don't use advisory committee.
25	HFD-100 memo to HFD-2.....	Confirms use of the advisory committee.

Mr. FOUNTAIN. Dr. Martin, your January 7, 1975, visit is listed in this chronology. In further reference to this visit, it was my impression that you testified that Dr. Kelsey was present and expressed the view that the drug should be banned. FDA's memorandum of the conference, now in the record, states on page 2, and I quote, "Dr. Kelsey said that she could not understand how they could continue to ship the product after they had withdrawn their NDA, and she was also concerned with the lead content."

The memorandum does not indicate that she expressed the view that the drug should be banned. Does this memorandum, to the best of your recollection, accurately reflect what Dr. Kelsey said? If not, what is your recollection?

Dr. MARTIN. It does reflect it pretty accurately, but I think, and this is my interpretation as I think back, that she was extremely forceful in her opinion regarding the drug being taken off the market.

Mr. FOUNTAIN. I might add that I am familiar with Dr. Kelsey's work at FDA. As you know, she is a highly honored employee, having received a medal from one of our past Presidents for her efforts in preventing the thalidomide approval for general marketing in the United States. In fact, if she had not been insistent upon an adequate measure of proof of the drug's safety, the drug might have been approved and the tragedy of thalidomide deformities would have been even greater.

I will suspend at this moment, and yield to Mr. Levitas, and then I will continue my questioning.

Mr. LEVITAS. I thank the chairman for yielding.

I found the testimony of the dentists here today thus far most interesting.

I would like to make this observation from my vantage point: that I do not feel personally competent, nor that it would be proper for this committee itself to involve itself in the area of which method

of professional therapy is the most appropriate. I think we do have a responsibility to see that the Food and Drug Administration carries out the laws of the United States, enforces them, and safeguards the citizens of the United States by determining whether there are unsafe drugs, or whether there are illegal drugs, and taking strict action to do something about it.

In that regard, I would like to focus my questions on this particular point.

My first question goes to Dr. Martin.

Dr. Martin, it is my understanding that the American Endodontic Society, those who are the proponents of the material N2 or whatever its symbols and names are at the present time, contend that it is not a drug at all. They further contend that the materials that they use, the ingredients of this, are the same as are used in other materials, such as gutta percha; it is the same type of material. What is your comment on that?

Dr. MARTIN. The material has to be considered a drug inasmuch as they are utilizing it in that manner based on a chemical approach to root canal therapy. They say that in their statement.

The dosated paraformaldehyde effect would make it a chemical, and therefore a drug that is placed into the mouth.

The gutta percha—

Mr. LEVITAS. Before you respond to the second part of my question—in your discussions with FDA over the long period of time in which you apparently had great difficulty in getting their attention, did the question of whether it was a drug or not come up in the conversation?

Dr. MARTIN. No. It always seemed to be taken for granted that it was a drug. They never questioned that aspect of it at all.

Mr. LEVITAS. Proceed with the second part.

Dr. MARTIN. The gutta percha compound is the inert obturator that conventional endodontists use to seal the canal. It does not contain paraformaldehyde. It has zinc oxide and various other polymers in it. It has no steroids. No mercury. No mercurials. Therefore I do not think you can liken the two in any analogous way.

Mr. LEVITAS. Dr. Glick, one minor question for you, please. On page 3 you make reference to Shapiro. I could not find a reference in the bibliography. Is that the article by Shapiro and Grossman in the *Journal of Endodontics* magazine?

Dr. GLICK. Yes. I am sorry it was not put in there. I did include it in with the references which I attached to my statement.

Mr. LEVITAS. Dr. Glick, you do not make reference to an article by Oswald and Cohen in February.

Dr. GLICK. I inadvertently omitted that, but I included it as part of my references.

Dr. MARTIN. I think you will find that I included that in my references as well.

Mr. LEVITAS. Dr. Cohen, let me ask you this question. This gets back to the question of the safety and health. I am most concerned about whether FDA is doing its job or not.

You listed the percentages of these materials which were in the various formulations. In terms of weight, how much of this substance is put into the canal of a molar, let us say?

Dr. COHEN. In terms of weight it would be difficult to give any specific number because each person, each tooth, is different from every other tooth in the mouth.

In terms of weight I would say, reasonably speaking, it is very small, but terms of weight does not reflect the potency of the drugs that are being used.

Paraformaldehyde, even in miniscule amounts, has a highly toxic and poisonous type of effect on the tissue with which it comes into contact, and even on peripheral tissues—that is, tissues even away from the area that it has been brought in contact with.

Mr. LEVITAS. With specific reference to heavy metals that are in this substance and the possible problems of pathology that could result to the bone marrow and the liver, for example, my question is this: Is such a small amount of these materials really harmful? Are we talking about the nose of a gnat?

Dr. COHEN. I would defer to Dr. Martin.

Dr. MARTIN. You talked about the heavy metals.

I would like to quote from a study that was done by the American Endodontic Society regarding lead. It is their "Information Bulletin." They state that, "There have been blood lead studies completed on humans that demonstrate a nondetectable blood lead level even in gross overfillings." They did a study on filling the eye tooth or canine tooth of an animal, and they found that they could not determine it.

However, they said: "The daily permissible intake of elemental lead in children is 300 micrograms." They continue with the study done by Shapiro. Shapiro and Grossman claimed that if you use 300 micrograms of lead in the canine tooth root canal, then you do not get 300 micrograms of lead absorbed into the system. Possibly 1 percent of that lead goes in. Maybe 10 percent.

In actuality, only 10 percent of ingested lead anywhere enters the gut, and if we were to take 10 percent of 300 micrograms, that is 30 micrograms, that is a maximal amount allowed in permissible daily intake.

If we assumed that the root canal leached out only $\frac{1}{2}$ to 1 percent, as shown by the fact that the material is absorbed, then 26 to 50 micrograms would enter the GI tract.

This is comparable to the total permissible amount in the GI tract of the maximum daily permissible dose.

Dr. COHEN. If I may add something else to that. In the Goodman and Gilman 1975 edition, it points out that lead in any quantity, even though it may be supposedly miniscule—and I suggest at various times that it is far from miniscule—is just unacceptable in terms of what is healthy for us.

Regardless of which organ it goes to, and it does go to several organs, its basic effect is that of being a toxicological heavy metal.

Mr. LEVITAS. Thank you, sir.

I have one last series of questions to Dr. Martin. I am intrigued about your experiences with the Food and Drug Administration.

Your meeting which occurred in January of 1975 intrigues me. I want to make sure who was there. There was Dr. Siskin, yourself, Dr. Kelsey, and Al Lavender—who was that?

Dr. MARTIN. I think he was with the Division of Compliance.

Mr. LEVITAS. And Chastonay?

Dr. MARTIN. He is also with the Division of Compliance.

Mr. LEVITAS. Gary Boyer.

Dr. MARTIN. I am not sure.

Mr. LEVITAS. Dr. Joseph Renna.

Dr. MARTIN. The Bureau of Drugs.

Mr. LEVITAS. Dr. Gilkes I gather is Executive Secretary of this Advisory Committee?

Dr. MARTIN. Yes.

Mr. LEVITAS. Dr. Clark?

Dr. MARTIN. Acting Director of the Division of Surgical Dental Drug Products.

Mr. LEVITAS. Dr. Carr.

Dr. MARTIN. Generic drugs.

Mr. LEVITAS. Dr. George Wade.

Dr. MARTIN. Bureau of Drugs.

Mr. LEVITAS. And Mr. Wetherell.

Dr. MARTIN. Legislative Services, FDA.

Mr. LEVITAS. It is my information that for quite some time—I am looking here at a memorandum of July 23, 1971, which appears to be a memorandum within the Food and Drug Administration—that it is recognized that N2 is a new drug.

In 1974 you had attempted to call information to the attention of the Food and Drug Administration, pointing out some of the dangers and hazards of this new drug. Forget about the professional arguments and the appropriateness of treatment.

Yet, it was only after you had contacted Congressman Gude that you got the impression that all this material was even read or studied by these officials with whom you have been discussing the matter; is that correct?

Dr. MARTIN. That is the impression that I seemed to get out of it, because of a possibly somewhat slow response in their evaluation of the material.

Mr. LEVITAS. I am also intrigued by the fact that you were able to go down and obtain copies of documents and studies that the officials of the FDA and the Advisory Committee seemed to have difficulty in locating.

Do you know why that occurred? Were they newly put in the library at that time?

Dr. MARTIN. The material that was gathered by the FDA, it seemed to be emphasized, was coming out of the National Library of Medicine. It is very possible that the National Library of Medicine does not have a complete file system or library regarding dental journals.

I was able to develop my material through the dental school library at Georgetown University.

Mr. LEVITAS. When Dr. Gilkes told your wife in the spring of 1975 that it was just too much to do, did she understand him to mean that it was too much for him to do to read that memorandum which you had prepared?

Dr. MARTIN. No, that was not it. It was a matter of Xeroxing the original documents and it was very possible that they could not get to the Xerox machine at that time, and there was a question as to when it could be gotten to.

I was frankly afraid to let it out of my hand, because I had only one copy and I did not want to go back to the library.

Mr. LEVITAS. Thank you, Doctor.

Dr. GLICK. May I ask this? Mr. Levitas, you started out by saying that you had read something about percha, which was apparently a

reference to gutta percha, that you had apparently read from something that had been given to you. I think Dr. Cohen answered partly—that certain elements are in that which we are questioning in the N2 formula.

I think the statement has been made by the proponents of the N2 method when they have been attacked about the lead content, that the gutta percha, which is a solid core filling material that we in “conventional endodontics” use, has lead in it also. I think Dr. Cohen has some letters. Do you have those available from the manufacturers who stated that they had no lead in their gutta percha? I think the letters unequivocally state no.

Dr. COHEN. Sir, I have letters—

Mr. LEVITAS. Let me put that in context. The information that I have and the committee has is that the spectrographic analysis of gutta percha shows that only about 20 percent of it is gutta percha and the largest percentage is zinc oxide. Gutta percha also has traces of lead as well as cadmium.

Dr. COHEN. I would say that that statement is basically true. I would add to it that if things are kept in perspective, indeed traces of lead can be found in virtually everything including our hair, our fingernails, and other parts of our body.

From a technical point of view that is considered a miniscule form of poisoning in any form and any dose, and lead is unacceptable in our bodies.

I have letters from two major manufacturers of this material which is used in conventional endodontics today by all dentists whether they are in the general practice of dentistry or whether they are in limited practice, which point out unequivocally that the percent of lead that can be found in gutta percha is truly miniscule.

Let me illustrate by a letter from the Hygienic Manufacturing Co. where they point out that the lead content is less than four parts per million which, to the best of my knowledge, is less than the amount of lead that we can find right now in the analyses of hair and fingernails.

Additionally, I have a letter from the Premier Dental Supply Co. which also points out that there is no lead in their gutta percha.

Finally, I just heard this morning from the manufacturer's representative that Ransom and Randolph can also state that there is virtually no lead at all in gutta percha.

Let me back up for just a moment, if I may.

Mr. LEVITAS. May we have copies of those letters, Dr. Cohen?

Dr. COHEN. Yes.

Mr. FOUNTAIN. That will be inserted in the record.

[The letters referred to follow:]

PREMIER DENTAL PRODUCTS Co.,
Philadelphia, Pa., March 25, 1975.

Dr. STEPHEN COHEN,
Chairman, Endodontic Department, University of the Pacific, School of Dentistry,
San Francisco, Calif.

DEAR DR. COHEN: Enclosed is a copy of a letter received from Dental Mirror Company, relative to the rumor that Premier Gutta Percha Points contain lead.

I think you will see from this letter that someone is passing nasty rumors.

Thank you very much for doing your best to dispel this misinformation.

Very truly yours,

MORTON L. CHARLESTEIN.

DENTAL MIRROR CO., LTD.,
Cleaveragh Park, Sligo, Republic of Ireland,
 March 21, 1975.

MESSRS. PREMIER DENTAL IMPORT EXPORT CO.,
Philadelphia, Pa.

GUTTA PERCHA POINTS

DEAR MORTON: In reply to your letter dated 13th inst. I can assure you that *lead does not even get near our Gutta Percha Points* let alone into their substance. Also that their colouring agent has *passed the USA FDA specifications*.

In fact I would be grateful if, with the aid of Dr. S. Cohen, you could get the names and addresses of the dentists who spread this nasty rumour for I have a good mind to sue them for libel.

At the same time I suggest that you bring a rather strong worded denial in your next issue of PREMIERLITE to dispel any doubts which by now may exist in connection with our products.

Kind regards

Very truly yours,

(S) _____,
Director.

THE HYGIENIC DENTAL MFG. CO.,
Akron, Ohio, March 11, 1975.

DR. STEPHEN COHEN,
Department of Endodontics, University of the Pacific, School of Dentistry, San Francisco, Calif.

DEAR DR. COHEN: The following is in response to your recent inquiry with regard to the possible inclusion of lead-containing additives in the formulation of HYGIENIC dental grade gutta percha compounds used in the manufacture of gutta percha points and gutta percha sheets manufactured by our company.

I can tell you, unequivocally, that we never have and do not presently add lead-containing additives in the formulation of the above products. In fact, under a continuing program of quality control and improvement, we have steadily increased the purity of the specific additives used in our manufacture of dental grade gutta percha compounds. According to our own and independent outside laboratory tests, we have achieved a trace level of lead content of less than 4 parts per million. Additional refinements are expected to lower this level still further.

I think the important point is that we do not and have not included specific lead-containing additives in our compounding of dental grade gutta percha. The prime additives are listed on the label of our gutta percha points, which we introduced in April, 1974, and which are generally regarded as the finest quality gutta percha points offered throughout the entire free world. Prior to offering our own gutta percha in point form, we have specialized in the compounding of dental grade gutta percha for many, many years and have developed a high level of technical expertise in working with such compounds.

We hope the above information and official statements will be useful to you and if we can be of any further assistance to you or others interested in dental grade gutta percha and its derivatives, we shall be most pleased to do so.

Kindest regards,

Cordially,

W. P. KEITH, Jr., *President.*

Dr. COHEN. Studies from independent laboratories provide this evidence. If someone questioned me about it I would be happy to comment about vested interests.

Mr. LEVITAS. I was about to ask you that question.

The question is this. It has been suggested to me that the position of the American Dental Association here is another example of how people, who have a vested interest in maintaining the status quo, are resisting new, and innovative and less expensive methods, and that, since there is an obvious financial stake here involved, that you obviously are resisting the innovative new methods to solve old problems.

Dr. COHEN. Thank you very much for asking that question, Sir.

To the best of my knowledge none of my colleagues, and I, certainly, do not have any vested interest directly or indirectly or through any relative, any financial interest in whatever is decided about the use of this material, nor in the use of conventional materials in endodontics. On the other hand, I think it may be of some interest and worthy of note to this subcommittee that the president of the American Endodontic Society, who happens to be in this audience this morning, Dr. Joseph Venneri, in fact on March 27, 1973 was sold or had transferred to him 1,000 shares of stock in a company called Steri Kem which was one of the main manufacturers of this material in our State of California.

Mr. LEVITAS. Thank you, Dr. Cohen.

Dr. COHEN. This stock was sold to him by a Mr. James Granant.

Mr. BURTON. I would like to thank the three doctors for the work and the expense in time and money out of their own pockets in order to bring this to our attention. It is one of the things that bugs me about our Government that we have to go through this type of action in order to get an agency of Government to do what it should do.

As I understand it, this would be to make tests of drugs and then make a determination as to whether it would come out OK or harmful. At least you would have a determination as to whether something is harmful to the citizens of this country.

The FDA has been busy in the district I represent worrying about health food stores and vitamin pills, so I can see that naturally there is a sense of priorities there. They would not have time for something as unimportant as this.

I wonder if you can answer this question, Dr. Cohen.

What is the American Endodontic Society? Is it the American society of people like the AMA?

Dr. COHEN. Yes. It was a group that was formed in 1969. The main emphasis of this group was to teach, advocate, and use the N2-type paste. It is referred to in another form as the "Sargenti method."

The thrust of this group, which claims to have an extraordinary membership although I have never seen the membership rolls—If I may go off on a tangent for a moment, I would like to add that one becomes a member of this organization merely by taking one of the courses which may be registered or not registered with a particular State, rather than actually applying and showing evidence that a dentist can actually do effective root canal treatment. So just by registering for a course, even if the dentist does not show up, technically, in fact, he becomes a member.

So that is how they had a supposedly large membership roll. They were formed in 1969. There is another organization which was formed in 1943 for disseminating information and teaching all dentists how to improve their techniques for conventional root canal treatment, and that is the American Association of Endodontists.

Mr. BURTON. So this organization is relatively new. Is it one in which you send a check for dues every year in order to be a member?

Dr. COHEN. Once one becomes a member then there are annual membership dues of about \$20, I believe it is.

Mr. BURTON. Do you gentlemen belong?

Dr. COHEN. None of us belongs.

Mr. BURTON. It is like the Who's-Who things that they send to us. You get elected to public office and they want your biography, and then they send you a book for \$50.

It took me 2 years to figure that one out.

Do you subscribe to a statement that was made by the society that the real responsibility for examining the safety and effectiveness of the materials involved in dental treatment lies with the various councils of the American Dental Association, as opposed to the Food and Drug Administration?

Dr. COHEN. The answer to that would be yes and no. It depends on what approach one is using.

The American Dental Association has many committees, like Congress. One of those committees is the Council on Dental Therapeutics and Devices.

In 1974 their book "Accepted Dental Therapeutics," on page 313 makes specific reference to this drug, or its progeny under any other name, as being group D, unacceptable. The Food and Drug Administration, as early—and it may have been earlier than April 1974—under the name of Mr. Kilpatrick, listed these N2 type compounds in any form as being "nonapproved," which means that they cannot cross State lines and they cannot be sold from one State to the next.

So, I suggest that perhaps to circumvent Federal control, many of these laboratories have been formed within State borders like in our State of California. There were two laboratories that used to prepare this for dentists on preprinted prescription forms. Now they are no longer permitted to do so.

Mr. BURTON. I will yield to Mr. Levitas.

Mr. LEVITAS. I thank the gentleman for yielding.

In your visual demonstration you had the formulations on one side, and on the other side you had what appeared to be prescription forms.

Who were those prescriptions forms directed to?

Dr. COHEN. Those prescription forms are often distributed at various dental meetings by companies that solicit the business and may be a party to distributing this drug within State borders.

Mr. LEVITAS. Let me ask you a question about that.

Is the reason that you have to have a prescription form signed by a licensed medical or dental practitioner because you are ordering a drug?

Dr. COHEN. Yes.

Mr. LEVITAS. Thank you.

Mr. BURTON. I have one last question because I will have to go to another subcommittee.

Your statement was that this was a society that was set up specifically for the purpose of broadening the use of this type of treatment as opposed to another method.

In other words, was it promotional for this medicine, or was it promotional for the new style of treatment, or what?

Dr. COHEN. For both, sir. It was designed to promote the use of this drug and to simplify—supposedly simplify—the way root canal treatments are being rendered today.

I would add that there is a most efficient conventional method readily available today.

Mr. BURTON. On what do you base that statement, that it was created to promote this drug?

Dr. COHEN. At many of the meetings, as we have recorded on tapes, the teachers of these courses would specifically mention using N2 or RC2B or what have you, or whatever the name may be.

They would mention exactly which laboratory one can purchase this drug from. For example, last year Dr. Werts, at a meeting that was held at the University of the Pacific, announced to the group that was there that RC2B could be purchased at that time from the Steri Kem Company in southern California.

Mr. BURTON. Is that before or after the stock transfer, or was he not a recipient?

Dr. COHEN. To the best of my knowledge he was not involved in this company.

Mr. BURTON. I have no further questions.

Mr. Chairman, I think you were out when I made my brief comment.

This upsets me that citizens have to go through the time and expense which these gentlemen have, and come to a congressional committee and again go through their employees, who are us, and through time and expense to get some Federal agency to do what it should do.

Maybe it turns out that everything is fine, and maybe it is not. But it outrages me that it takes these people's time and our time to get an agency to do what it should have been doing in the first place.

You have read the laws and they are mandated to do this under the law. I think it is small things like this, along with some of the other things, that make people lose faith in the whole governmental system.

This gentleman has had to come 3,000 miles, and the other gentleman comes a long way, and this other gentleman puts in the research time, hours of research, and we have an agency which does not respond, and we get to this point.

I commend these gentlemen.

On the other hand, I will not quite condemn the FDA, but I think it deserves everything that Senator Proxmire might want to give it.

Mr. FOUNTAIN. I think the gentleman makes a good point.

I might add that as far back as 1961 the record shows that the Food and Drug Administration barred the importation of this drug into this country because it had not been proven to be safe.

Dr. Glick, in addition to your prepared statement you also addressed a letter to me dated October 26, 1975, in which you answered a number of questions which I had raised in my October 10 letter to you.

I am placing both my October 10 letter and your response into the record to supplement your statement.

[The letters follow:]

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
INTERGOVERNMENTAL RELATIONS AND HUMAN RESOURCES SUBCOMMITTEE,
Washington, D.C., October 10, 1975.

DUDLEY GLICK, D.M.D.,
Beverly Hills, Calif.

DEAR DR. GLICK: This Subcommittee is responsible for reviewing the operations and activities of the Department of Health, Education and Welfare, of

which FDA is a part. We have recently held a series of hearings on FDA's use of advisory committees, and a report on this subject is in preparation.

We are scheduling a further hearing for October 31, 1975, at which time the Subcommittee will review FDA's handling of the new dental drug, "N-2", and similar formulations, promoted by Dr. Sargenti and others for use in root canal work. As you know, FDA, after consistently holding these to be new drugs which may not be shipped in interstate commerce before the approval of new drug applications (NDAs), is now referring this matter to an advisory committee and, in the meantime, permitting continued interstate shipment of the drugs. In this hearing, the Subcommittee will examine the propriety and legality of the use of an advisory committee under these circumstances.

I understand that you are an expert in the field of endodontics and, as such, are qualified to contribute materially in developing the pertinent facts concerning these drugs and FDA's regulation of them. I am informed that you have expressed a willingness to testify before the Subcommittee on this matter and we will be pleased to receive your testimony. It is our intention to obtain a Committee "friendly" subpoena to be served at the time of your appearance.

The hearing will be held in Room 2247 of the Rayburn House Office Building, 1st and Independence Avenue, S.W., Washington, D.C. at 9:30 a.m. on October 31, 1975.

I will appreciate your preparing a written statement for the hearing record. If the statement is too long to read in about ten minutes, please summarize it in an oral presentation of about that duration. Your prepared statement, regardless of its length, will appear in its entirety in the printed record. Please submit copies of your written statement at least twenty-four hours in advance of your appearance.

Your testimony will be helpful to the Subcommittee members if you would include the following:

1. Your qualifications and experience in the field of dentistry, including your current university and professional affiliations, published papers, etc. This may be accomplished by submission of a curriculum vitae for inclusion in the record.
2. Your specific interest in and knowledge of "N-2" and similar products, and whether you recognize them as safe and effective when used in accordance with directions.
3. Your opinion (and the basis for it) as to whether your colleagues who qualify as experts share your view. This opinion may be based on your contacts with others in the field and the opinions they may have expressed, your attendance at professional meetings, your reading or review of the professional literature, your university and teaching contacts, seminars, dental associations' positions, etc. Based on all of this, can you say that qualified experts generally recognize "N-2" and similar preparations as safe and effective? Whether or not they are actually safe and effective is not the question. Rather, the question is whether there is enough information available about the drugs, in the literature or elsewhere, for expert practitioners in the field to conclude that the drugs have been established to be safe and effective.
4. Your evidence, if you have any, that the drugs are, in your opinion, *unsafe* or *not effective*. As indicated in 3 above, this is a separate question from that of "general recognition" of safety and effectiveness.
5. Your contacts and experiences with FDA relating to "N-2" and similar preparations, and the outcome of such contacts.
6. Comments on how FDA is handling the matter and your suggestions concerning the regulatory action, if any, FDA should take or should have taken. We greatly appreciate your cooperation in this matter.

Sincerely,

L. H. FOUNTAIN, *Chairman.*

DUDLEY H. GLICK, D.D.S. INC.,
Beverly Hills, Calif., October 26, 1975.

Mr. L. H. FOUNTAIN,
*Chairman, Intergovernmental Relations and Human Resources Committee of the
Committee on Government Operations, Rayburn House Office Building,
Washington, D.C.*

DEAR SIR: In response to your letter dated October 10, 1975, I will answer the specific questions requested:

1. Enclosed is a curriculum vitae for the record.

2. My specific interest: Since 1972, I have been the American Association of Endodontists' Chairman of an Ad Hoc Committee to study Paraformaldehyde Filling Materials. I have a plethora of germane material, both pro and con, which has passed my desk. Based on the evidence I have read, I do not recognize them as safe and effective even if used in accordance with directions, which incidentally vary from time to time.

3. My views are unequivocally shared by colleagues whom I admire, respect and are experts and leaders in endodontics. No, qualified experts do not consider N2 as safe and effective. No, the information available is not conclusive in favor of use of N2 as safe and effective—in fact, far from it. Most of the pro information is primarily based on glowing testimonials by the originator and his disciples.

4. Enclosed are some references.

There is enough evidence, clinical, pathological and histological research, to convince me and most of my colleagues that N2 is a tissue irritant and a potentially dangerous drug. It may be of interest to know that in spite of the need for mass dental delivery in the service, Major General S. N. Bhaskar made the following statement at a meeting of the Beverly Hills Academy on October 20, 1975: "I have refused to authorize the use of the Sargenti method or material including N2 and RC2B in any Army installation throughout the United States and the world. We have examined what is referred to as the 'sclerotic zone' and have found it to be a necrotic zone. It is my firm belief that it is not the best that dentistry can offer." I think a similar position had been taken by the Air Force this past year.

5. The FDA has been aware of this drug in one form or another since 1962 when the ADA Council on Dental Therapeutics wrote them about it. The FDA seems to have assumed an arms-length, passive posture on the N2 issue. Perhaps they are not empowered to do more.

I shall see you on Friday, October 31, 1975.

Sincerely,

DUDLEY H. GLICK.

[Dr. Glick's synopsis of his curriculum vitae appears at p. 16.]

Mr. FOUNTAIN. Dr. Cohen, you had testified that California prohibits N2 type drugs from being distributed by commercial companies. Do you know approximately when California imposed this ban?

Dr. COHEN. Yes, sir.

Let me change a word. In essence, in California the drug is not banned because of a technicality, because if it were truly banned and if that word were used then it would prevent, under California law, even animal experimentation with the use of this drug.

All members of the dental community would strongly encourage the use of animal experimentation by the proponents instead of experimentation on man, to show the supposed safety and effectiveness of this material. So in lieu of a ban we have a functional equivalent in California right now of an embargo, which means that companies within the State cannot manufacture, distribute, or, for that matter, even give away free this particular material.

In addition to that, through the office of State Senator Peter Behr, an inquiry was made to the attorney general of the State of California regarding a loophole that the Department of Health of California thought existed in the law—that is, a dentist could have it compounded by prescription for an individual patient.

In fact, the attorney general's office—and I was notified about this on Tuesday afternoon—has ruled that there are three separate violations if a pharmacist compounds this for any reason, and if a dentist uses it for any patient.

In addition to that, the Department of Justice or the attorney general's office has already sent letters to the California Department of

Health, the California Board of Dental Examiners, the California Board of Pharmaceuticals (I think it is called that, or something to that effect) cautioning them about the use of this material, and reminding them that, in fact, no dentists can use this material under present conditions until an investigation of the drug application has been obtained from the proper State and Federal agencies.

Mr. FOUNTAIN. This question is directed to any or all of you.

Does the scientific and dental literature concerning the N2 type products provide a sound basis for interested dentists to conclude that the drugs have been established to be both safe and effective?

Dr. GLICK. No. I do not feel there is enough evidence either pathological, clinical, or histological—that is, researchwise—to convince me, and most of my colleagues also, that N2 is not a tissue irritant, and as such a potentially dangerous drug.

Dr. MARTIN. Mr. Chairman, in the analysis of the research articles between 1962 and 1975 the preponderant number of articles, which are about 24 or 25 in number, have come out and stated that they find that the N2 is too irritating and too caustic, and too deleterious a drug to be utilized.

I make reference in my memorandums, which I had given to the FDA, to the American Endodontic Society's own references. Unfortunately, most people do not read references, but inasmuch as I have been into it a little bit I have started reading their references to see what they are referring to as their basis.

I found that out of the 22 references cited, 3 were citations by Sargenti to himself or to the American Endodontic Organization, 5 were unrelated to N2, 1 was favorable, one I could not determine or get hold of the article. 1 came out that the material was inconclusive, and 11 were unfavorable either in results, procedure, or methodology concept.

We are dealing here with a very fine media presentation. Professionals and laymen, a lot of people, do not go into the language. They assume the people who use references are going to use references that are in their favor. In this case I do not think that they were in their favor.

Mr. FOUNTAIN. What you are saying is that the American Endodontic Society's own references give information indicating the undesirability and the danger of using this particular drug.

Dr. MARTIN. Yes; that is correct, sir.

Mr. FOUNTAIN. Do any of you personally know members of the FDA's Dental Products Advisory Committee?

Dr. MARTIN. Of the advisory committee?

I have met two of the members at dental meetings. Dr. Shira, who is now the president of the American Dental Association, and Dr. Smudski from the University of Pittsburgh.

Dr. GLICK. I know Dr. Shira and Dr. Ingle.

Mr. FOUNTAIN. Dr. Cohen, do you know any of them?

Dr. COHEN. I also know Dr. Shira.

Mr. FOUNTAIN. I might add at this point that Mr. Levitas has made a significant point. That is, that regardless of personal feelings or beliefs or opinions of any members of the subcommittee about the safety of this drug, or any other drugs, basically our job is to find

out whether the FDA is doing its job. That is primarily what our hearing is about today.

Of course, all of your testimony is relevant to that inquiry.

We are not in a position, nor are we competent, to pass judgment about the safety or lack of safety of a drug of this kind, although we may have some strong opinions at some point along the line.

FDA has consistently held, however, that N2 type drugs are new drugs; that is, they are not generally recognized as safe and effective.

Are any of you aware of any competent scientific evidence which, if made available to the Dental Products Advisory Committee, might result in a holding by the committee that the N2 type drugs are generally recognized as safe and effective?

Dr. COHEN. No, sir.

Dr. MARTIN. No, sir.

Dr. GLICK. No.

Mr. FOUNTAIN. Dr. Glick and Dr. Cohen, both of you submitted voluminous exhibits consisting of scientific papers and correspondence. All of this tends to show that N2 type drugs are not generally recognized as safe and effective, or show that they are unsafe or potentially unsafe. Is that correct?

Dr. COHEN. Yes.

Dr. MARTIN. Yes.

Dr. GLICK. Yes.

Mr. FOUNTAIN. I hesitate to expend additional public funds in making this large number of exhibits part of the public record. They will, however, be available at the subcommittee office for inspection by interested persons.

Let me ask you this. Do you know whether FDA is aware of all this material, or most of this material—a good part of which has appeared in the dental literature?

Dr. GLICK. I have no way of knowing.

Dr. MARTIN. As one of the persons in attendance at the January 1975 meeting, it seemed to me that a person stated to me that he thought that the only scientific article that the FDA was aware of was an article by Dr. Rappaport and his coworkers in 1964. They had not been completely cognizant of the more recent publications.

That was in January.

Dr. GLICK. I assume that they must have been cognizant of it because I have correspondence from Dr. Langeland who was quoted before, a noted histopathologist, who had stated this to Dr. Griegsby or someone there. Dr. Clark possibly, that they should read his article on the same subject. He was willing to submit his article.

So I know that they were made aware of at least his article on the possible adverse effects of N2.

Mr. FOUNTAIN. I realize that the FDA can write a letter stating that a certain drug should not be used, or is illegal because it had not been shown to be safe and effective.

In view of the fact that the FDA determined that this was a new drug as far back as 1961, and from that day on has responded to inquiries by stating that it is a new drug, and, as your testimony has pointed out, anyone who uses it does so at his own risk and would have to suffer the consequences in the event of any complaints or losses.

what is your opinion as to whether or not the Food and Drug Administration should have made it their business to be aware of this scientific literature? I do not know the basis upon which they wrote their letters. They may have done it without having all the facts, but what is your opinion as to whether or not they should have known?

Dr. COHEN. I and several other dentists have been traveling around the country explaining to dentists exactly what the hazards were in the use of this drug.

I had the opportunity to present this earlier this year in New Jersey. This was a course about the use of N2. I would also add that it is the abuse of this paste. In attendance were a couple of officials from the Federal Food and Drug Administration. To the best of my knowledge they have tried their best to get action from other members of the FDA. There has been an understanding.

If I may read one brief paragraph from my office statement—it says “In my communication with FDA there appears to be an understanding of the problems relating to the easy manufacture and use of this nonapproved drug. Nevertheless, to date there has been no enforcement or compliance action.”

Mr. LEVITAS. At that point, Mr. Chairman, may I make an inquiry? I suppose this is to Dr. Martin and Dr. Cohen.

Just what is it that you would like for the FDA to do which they have not done?

As I understand it, N2, or whatever variant of terminology is to be used, is considered to be a new drug. It cannot be shipped in interstate commerce. It cannot be manufactured as a drug and supplied around the country.

The FDA has, by letters to State regulatory officials, taken the position that the question of whether it can be formulated by individual pharmacists acting on prescription is a matter that addresses itself to the various States.

Just what is it now, in addition to that position, that you would like for FDA to do under the food, drug, and cosmetic law and for which you cited three sections, Dr. Martin? What do you think can be done under those three sections?

Dr. MARTIN. I cited those three sections because Dr. Leventhal had said the FDA replies were opinions. Opinions, I was under the impression, were just that. It was not an enforceable situation.

From my reading of the FDC Act it seems to me that it's more than opinions, it is an enforceable situation. It is correct that the FDA would have an extremely difficult time trying to locate pharmacies all around the United States that might be shipping through interstate commerce.

It would behoove the dentists who would become made aware of this situation to inform the FDA of these particular pharmacies that might be sending preprinted order forms in interstate commerce, get this material to the FDA, and have the FDA take action as prescribed by law on the violation of interstate commerce.

I would also like to see the FDA contact the various State health departments to make them fully cognizant of the hazards of this situation. I am given to understand that many of the States follow the Federal Food and Cosmetic Act and also FDA opinions regarding this. Therefore, if they are fully aware of it, it would then be up to the State to enforce it on a local basis. If they have the backing of

the Federal Government, they might be more prone to enforce it. This seems to be the case in a letter I just received from Dr. Neil Solomon, the secretary of the Maryland Health and Mental Hygiene Division.

He said, due to the action of FDA stating that this is a nonapproved drug, but with them not taking definitive action as of this moment, then he is going to look into the matter and submit this material to the attorney general for the State of Maryland.

Mr. LEVITAS. Who was this?

Dr. MARTIN. Neil Solomon, director of health for the State of Maryland.

Mr. LEVITAS. Dr. Martin, you say that Dr. Solomon had received a copy of a memorandum dated April 2, 1974, from the FDA directed to State drug officials. The subject is N2 compounds. The memorandum in part states that N2 is considered to be a new drug. The list of ingredients is set forth.

Then, in a reply to a question which had been asked by a dental surgeon, "If a drug compound is not approved by your department for commercial marketing, is it legal to have a pharmacy compound it by prescription," the reply to this question is, "We suggest that he contact the State board of pharmacy in that State concerning the legality of a pharmacist compounding the prescription order on an item the FDA considers not approved, because we believe that this problem would be best handled by State officials."

Are you familiar with that letter?

Dr. MARTIN. Yes, I am.

Dr. COHEN. Mr. Levitas, may I comment on that?

The Department of Health in the State of Nebraska, about 2 or 3 months ago, sent a letter of caution and warning to every dentist in the State informing them about the potential hazards in the use of this material.

The State of California, about 2 or 3 months ago, sent a letter to every dentist in the State with the warnings, as it were, that had already been issued by State and Federal agencies regarding the N2 type drugs.

So a number of dentists in some States have already been informed of the potential hazards of using these particular drugs.

I should like to submit at the end of my comments one last sentence from my prepared statement.

I believe the Federal Food and Drug Administration should fulfill its mandated regulatory function by obtaining injunctions against the manufacture and distribution of N2 paste and publish in the Federal Register warning notices against future shipment of this drug.

Mr. LEVITAS. Let me ask you this.

I thought the evidence we have heard so far is that it is not being manufactured and shipped in interstate commerce, but that it is being formulated on prescriptions issued within each State to pharmacies within that State?

Dr. COHEN. That is true, but there are companies that will spring up overnight. I do not know how it can happen so quickly, but the best illustration is what happened last month in California. We received these preprinted prescription notices at a meeting of the California Dental Association that were mailed to members of the California Dental Association saying that if you wish to order this func-

tional equivalent of an N2 type paste, you can get it from Flagstaff, Ariz. And the name of the company I think was Moore Drugs.

But the California Department of Health has since moved on that, and has prevented that company from importing that material into our State.

Mr. FOUNTAIN. During the course of our hearing we will get further information indicating the interstate commerce aspect of this. This will supplement what you were saying.

Section 201(p) of the act defines a new drug as a drug the composition of which is such that it is not generally recognized as safe and effective by experts qualified by scientific training and experience to evaluate the safety and effectiveness of drugs when the drug is used in the conditions and manner of use set forth in the labeling of the drug.

Section 301(d) prohibits delivery or introduction for delivery of a new drug in interstate commerce which does not comply with section 505.

I do not happen to have section 505 but I have on my right Mr. Goldhammer who worked for 30 years with the FDA and who knows, I think, most of it by heart.

Mr. GOLDHAMMER. Section 505(a) reads somewhat as follows: "No person shall introduce or deliver for introduction into interstate commerce a new drug unless an approved new drug application is effective with respect to that drug, pursuant to the requirements of subsection (b)." Subsection (b), and other sections of 505 provide for the submission of new drug applications by those who want to sponsor a drug or ship it in interstate commerce. Adequate scientific and other data to establish that the drug is both safe and effective must be provided.

Mr. FOUNTAIN. Thank you.

Dr. COHEN. Mr. Chairman, let me make a comment pertinent to what Mr. Goldhammer said.

In 1962 the AGSA Co. submitted a new drug application for the use of this particular material, which at that time was called N2.

They submitted, along with their application, testimonials from patients or the equivalent, saying just how good the drug really was.

The Federal Food and Drug Administration rejected this application because scientific data supporting the effectiveness and safety of this drug was not supplied along with the new drug application. Consequently, in June of 1967 the new drug application was withdrawn by the AGSA Co. and the drug was categorized at that time, or prior to that time, as nonapproved by the FDA.

Mr. FOUNTAIN. Notwithstanding that fact, that same drug is available on the market today.

Dr. COHEN. Yes, sir.

Mr. FOUNTAIN. We have many questions we would like to ask of all three of you, but time will simply not permit it.

Before we release you, I would like to ask if there are any other observations that any of you would like to make in connection with our inquiry today.

Dr. GLICK. Mr. Chairman, I would like to state in answer to Mr. Levitas' initial question that by assuming the posture which the FDA has taken, which is sort of an arm's length attitude, they have actually

left this in a state of limbo. That is unfortunate. The burden is on us, as Dr. Martin pointed out, and the onus is on us, to dig up and present all these facts. Perhaps that could have been utilized to better advantage earlier.

Dr. MARTIN. Mr. Chairman, my contact with the FDA has been somewhat varied. However, I think their intentions are good; their intentions are honorable. They are trying to interpret the law and enforce it as they see fit.

There is in today's times, in some cases, lack of due process or maybe undue due process. I think what they have tried to do is give every opportunity to the promoters of the drug and the people who do not believe in the drugs, such as myself and the other members here with me, to present our information. And I am grateful for that.

I think now that they have all the information fully at their disposal, I would hope, and I feel confident that they will, act in a wise and judicious manner to bring this situation to an expedient end.

Dr. COHEN. Mr. Chairman, I would like to thank you for taking the time to listen to the efforts that we have put into this.

I, too, would reemphasize what Dr. Martin has stated: I think there are a number of members in the FDA who are trying their best to do their job as they interpret it. I commend these men and women.

I would rephrase what Dr. Martin has said: Sometimes we may suffer because of some regulatory agency from undue due process. Perhaps that may be what is occurring here. But I think that ultimately the FDA will carry out its mandated function.

Mr. FOUNTAIN. Thank you very much.

Again, I want to thank all of you for your forthright statements and for your willingness to respond to our questions, and for taking your valuable time to come here and give us these facts.

Thank you very much.

Our next witness is Dr. Ramon Werts, who is the executive director of the American Endodontic Society. Dr. Werts, you may come forward.

It looks as though we will not have time to get to the representatives of the FDA today. We will have to ask them to come another time because we want to give the sponsor of the drug, Dr. Werts, an opportunity to testify.

We will be in touch with the FDA officials for a future date.

Dr. Werts, you may proceed.

**STATEMENT OF RAMON WERTS, D.D.S., EXECUTIVE DIRECTOR,
AMERICAN ENDODONTIC SOCIETY; ACCOMPANIED BY WILLIAM
F. WEIGEL, COUNSEL**

Dr. WERTS. Mr. Chairman and members of the committee. My name is Ramon Werts of Fullerton, Calif., a dentist in general practice. I am the executive director of the American Endodontic Society, an organization of approximately 10,000 member dentists, mostly general practitioners who use a simplified method of root canal treatment. My statements today are on behalf of the society.

I am accompanied by William F. Weigel of Rogers, Hoge & Hills, New York, special counsel for the society. It should also be noted

that our board of directors includes such prominent men in dentistry as Dr. Thomas Bradshaw, immediate past president, American Association of Dental Examiners; Dr. Knut Flygenring, general chairman, 1976 scientific session, California Dental Association, and instructor at University of Southern California, Dr. John Tabak, president, American Society of Dentistry for Children; Dr. Francis Summers, former professor and chairman, Department of Pedodontics, USC and Dr. John Svoboda, former professor and chairman, Department of Oral Surgery, Loyola and USC.

In addition to the board of directors, we have many members who are holding respected positions in dental organizations.

Not included in my written statement, because it only occurred yesterday, is the fact that the new president-elect of the American Dental Association, Dr. Frank Shuler of Clinton, Wis., is a member of the American Endodontic Society and has been so for 3 years.

Our society is listed in the American Dental Association Directory as is the American Association of Endodontists as "Groups in the Dental Field."

Courses endorsed by our Society are announced in the American Dental Association Journal as are all courses presented by dental societies. Our society is as "recognized" by ADA as is the AAE.

Only boards of specialty groups have official recognition by the American Dental Association.

In addition to our membership there are at least an equal number of dentists using this simplified technique who are not members.

A survey of its readership by a recognized dental publication—Dental Survey—found that 20 percent of the dentists surveyed indicated their use of this method. If there were a way of identifying all users of the method, the figure would reasonably be 30,000 dentists—a significant segment of the profession.

A fundamental problem exists in dentistry today in the United States. In 1972 the American Dental Association Task Force report stated that we have in this country 1 billion unfilled dental cavities; that 50 million people have lost some or all of their teeth and that 25 million people are totally edentulous.

Further, it has been estimated that 300 million teeth are extracted every year. Modern dental techniques are available to restore even grossly decayed teeth. Indeed, root canal therapy, by whatever method used, can usually effect healing of abscessed teeth. But, the inability of the patient to afford such treatment in far too many cases is the ultimate reason for extraction.

The so-called "conventional" endodontic treatment can often cost as much as \$300 for a single tooth, which then should receive a crown restoration for an additional \$150–\$200. The real facts of life are simply that some people honestly cannot afford \$400–\$500 to save a tooth.

It is the responsibility of the profession of dentistry to save teeth—not to extract them. The extraction of a tooth is the amputation of a part of the human body and the ultimate loss of teeth may place that patient in the category of a dental cripple.

The simplified procedures employed by our members provide a modality of treatment not really that basically different than conventional approaches, but they can in most cases be accomplished in a shorter treatment time, making a lower fee possible. As a matter of

fact, a survey of our membership last year found that 61 percent of the dentists using this approach had lowered their fees for root canal treatment. (See attachment 1.)

What is at issue is not a scientific problem—it is a social problem. Adequate scientific documentation is available and can be presented to this committee if requested, that our simplified method and the materials employed in it are safe and effective. For example, a standard test for toxicity (LD_{50}) was conducted by an independent research laboratory which found that, based on limits established by the Federal Toxic Substances Act, the specific formula referred to as “RC2B” is twice as safe as table salt. (See attachment 2.)

As I understand the scope of your present investigation you are, in part, examining the use of advisory committees by the FDA. This use has certainly grown in recent years and is a direct result of the desire of the professions of medicine and dentistry to “police” their own professions, and to have adequate input from qualified professionals on governmental agency decisions related to the practice of medicine and dentistry. These advisory committees indeed serve a useful function.

As you know, the FDA Dental Drug Products Advisory Committee will hold a hearing on November 12, 1975, on the very subject under discussion today. And, I would hope that committee will react in an unbiased and fair way to the testimony presented to it. We endorse the idea of FDA’s looking to the scientific community for assistance in these areas.

The real responsibility for examining the safety and effectiveness of materials involved in dental treatment, however, lies with the various councils of the American Dental Association. These would include the Council on Dental Research, the Council on Dental Therapeutics and the Council on Dental Materials and Devices. Unfortunately, these councils have as yet done no adequate research to either prove or disprove the effectiveness of “RC2B” or any other endodontic material. Because of this, and in light of unwarranted public criticisms in recent weeks, there was no other alternative that FDA could have adopted but to refer this to its advisory committee.

It is unfortunate that an intraprofessional dispute is being aired in the public press. It is also unfortunate that such publicity is often distorted by innuendo, misrepresentation and half-truth. As only one example, I would cite the article in Newsweek magazine (October 6, 1975) wherein there was cited a case in which this material (RC2B), supposedly caused a “slough of the palate.” (See attachment 3.) “Slough” meaning dissolving away a part of the tissue, and this case was referred to by Dr. Cohen previously.

Virtually all endodontists acknowledge that the same thing has occurred with conventional techniques and materials.

The dental literature is replete with articles on failure of endodontic treatment using all techniques. To cite isolated cases of failures, as was done today, is in no way an indictment of a method or material. No one in dentistry today, I hope, pretends that anything we do is 100-percent successful or predictable.

Charges of potential toxic hazards from some of the ingredients of “RC2B” are unfounded. Any substance can be toxic in the improper dosage. The quantity of lead present is so minute that it can in no way pose a health hazard. Calculations indicate that it would be necessary

to do 10,000 root canal fillings on the same patient to even reach the daily permissible intake of lead.

Before you now in the House is H.R. 5545, which, if adopted, as it appears it will be, will provide the needed regulations of dental devices and materials. Here also, the provision for input from the profession has been included and, if properly utilized, could solve the total issue under consideration today.

Presumably, "RC2B" and other dental materials will receive thorough and careful consideration by those experts best able to analyze them from an objective standpoint.

We strenuously disagree with the claim that "RC2B" is a "drug," whereas other materials such as gutta percha or silver points (used in the conventional approach) are "inert materials."

A spectrographic analysis of gutta percha—the most widely used endodontic material—shows that only approximately 20 percent of such filling is actually gutta percha. The largest percentage—60–70 percent (depending on the commercial brand) is zinc oxide, the very same major ingredient in "RC2B." (See attachment 4.)

But interestingly, all gutta percha points also have traces of lead, as well as cadmium, usually considered to be potentially poisonous substances. Under existing FDA regulations, if the interstate sale of "RC2B" is illegal, all gutta percha sold in interstate commerce would also be illegal, because none contain a directional insert nor list the percentage of ingredients.

To summarize, our simplified method and materials have been unjustly selected for discriminatory action, and the thrust of this criticism has been from a small group of endodontist specialists. Interestingly, the most recent American Dental Association statistics disclose but 662 board-certified endodontist specialists in the entire United States, even though this is the highest paid specialty in the dental profession. On the other hand, countless thousands of general practitioners, using our methods and materials, are delivering to their patients a high standard of dental care which otherwise would be unavailable due to the lack of economic means or accessibility (particularly in rural areas) to an endodontic specialist.

Thank you, Mr. Chairman.

Mr. FOUNTAIN. Thank you, Dr. Werts.

[The articles referred to follow:]

ATTACHMENT 1

[From the A.E.S. Newsletter, American Endodontic Society, February 1975]

SURVEY RESULTS

In July, 1974, the Marketing Research Bureau of Laguna Beach, California undertook a study of the Sargenti Method of endodontics for the American Endodontic Society. The purpose of this study was to determine the frequency of usage of the method among the Society's members, their degree of satisfaction, and problems with it, and the impact that the method has had on their practice. Coincidentally, a picture of how the members view the Society and its activities was to be developed as well.

To accomplish the aims of the study, a questionnaire was mailed to the 8,000 members of the Society on August 10, 1974, and was followed up three weeks later with a second mailing. As of October 10, 1974, the study's cut-off date, 2,968 responses (37.1%) were received. These constitute the basis of the findings presented in this report.

In order to determine if the answers of the dentists who returned the questionnaires were valid for the whole Society, 125 dentists who had not responded to the questionnaire were interviewed by telephone. There is no significant statistical difference between the respondents and the non-respondents.

Following is a summary of the most significant facts developed. Statistics were derived by computer analysis.

92.0% of the membership is currently using the Sargenti Method. Of the 8.0% not using this technique, nearly one-half indicated that they have not used it at all.

Since 1970, AES members have treated 2,076,495 teeth with the Sargenti Method—1,620,719 permanent teeth and 455,776 deciduous teeth.

During the last month, AES members treated 53,400 vital teeth, and 61,800 gangrenous teeth. The last 12 months' experience shows 452,600 vital and 746,200 gangrenous teeth. The success factor runs 95% to 98%.

The average AES member using the method, treated 15.7 teeth last month; 126.2 teeth the last year.

User experience with the Sargenti Method shows:

The success factor is uniformly high for all types of teeth treated (over 94.6%).

The success factor begins high and remains high with experience.

The average number of teeth treated per dentist has increased as he gains experience.

The three most important positive elements associated with the Sargenti Method by its users are:

Efficiency/rapidity of the technique

Simplicity/ease of the technique for the dentist

Success rate/tooth retention

The number of patients treated per month that would have been otherwise referred out of the office increases to 9.8 with 5 years or more experience with the Sargenti Method from 6.2 with less than one year's experience.

89.4% said that they had increased the number of patients they could treat.

85.3% of those using the method indicate they have reduced extractions.

61.3% have lowered their fees for endodontic procedures. Many who had not lowered their fees said that they had not raised them.

Conventional endodontics are still being used by a small percentage of the members. However, the average number of teeth treated per month or per year is less than those using the Sargenti Method.

The largest single group of both users and non-users have been in practice for at least 10 years. Most are general practitioners, and most practice solo.

In future issues of the Newsletter, a complete report will be presented on each of the areas surveyed. Analysis of the results have been compiled by geographical distribution, length of time the method has been used, etc. Also to be reported will be some of the individual comments by the surveyed members.

ATTACHMENT 2

TOXICITY OF RC2B FORMULA

REPORT OF THE COUNCIL ON ENDODONTIC THERAPEUTICS, AMERICAN ENDODONTIC SOCIETY

Root Canal cements contain various ingredients, some of which could be classified as "toxic." Although no known cases of serious sequelae have been reported, the concern for safety of the patient made it necessary to investigate this possibility.

A standard test for toxicity is the "LD₅₀" (median lethal dose; a dose which is lethal for 50% of the test subjects).

METHOD AND MATERIALS

The root canal cement studied was "RC2B" (61% zinc oxide, 11% lead tetroxide, 9% bismuth subcarbonate, 6.5% paraformaldehyde, 4% bismuth subnitrate, 4% titanium dioxide, 3% barium sulfate, 1.2% hydrocortisone, 0.21% prednisolone, 0.09% phenylmercuric borate.)

Male mice, 30.6 (28-38) grams, were stomach intubated with suspensions of the test powder. Suspensions were prepared by trituration with gum acacia (0.6 grams of gum acacia per gram of test powder) in a water volume of 0.5 ml for each 10 grams of mouse. The mice were observed for morbidity or death over a 10-day interval. At the end of 10 days the surviving mice were autopsied for macroscopic pathology of the thoracic and abdominal organs.

RESULTS

TABLE 1

Dose, grams/kilogram	Mice	Mortality		Comment
		Dead	Percent dead	
10.....	12	12	100	All dead within 24 hrs.
7.....	11	11	100	All dead within 38 hrs.
6.....	13	7	54	All dead within 48 hrs.
5.....	10	2	20	1 death before 16 hrs. 1 death at 80 hrs.

Note: No deaths occurred after 80 hrs. All the survivors appeared well and active at the end of the 10-day test. No macroscopic pathology was detected in the thoracic or abdominal organs at autopsy. Drobit analysis of the log doses of 5.0 and 6.0 g/kg. showed an LD₅₀ of 5.9 g/kg.

DISCUSSION

The LD₅₀ for RC2B was 5900 milligrams per kilogram of mouse. This value is greater than the 2500 milligrams per kilogram dose limit which is considered to be a "toxic substance" by the Federal Hazardous Substances Act 191.1(F) (2). RC2B is therefore considered to be not a "toxic substance."

For a reference comparison it is interesting to note the LD₅₀ for other materials. For example the LD₅₀ for aspirin is 815 milligrams per kilogram of mouse.

Following are some common substances, with their respective LD₅₀ (same oral route of administration, but on rats instead of mice).

TABLE 2

Material:	LD ₅₀
Salt	3,000 mg/kg.
Acetic acid.....	3,310 mg/kg.
Phenobarbitol	660 mg/kg.
Chloroform	300 mg/kg.
Cadmium oxide	72 mg/kg.
Eugenol	2,680 mg/kg.

SUMMARY

To determine the LD₅₀ of RC2B root canal cement, male mice were stomach-intubated with suspensions of the test powder. The LD₅₀ was greater than the dose limit established by the Federal Hazardous Substances Act. RC2B can therefore be considered not a "toxic substance."

ATTACHMENT 3

[From Newsweek, Oct. 6, 1975]

AT THE ROOT OF THE TROUBLE

One of the most promising treatments in modern dentistry is root-canal therapy. Known technically as "endodontics" (from the Greek "within the tooth"), the treatment involves removal of the infected pulp inside the tooth. When successful, such therapy makes extraction and replacement with a false tooth unnecessary. Conventional root-canal therapy, except in simple cases, is considered a job for a specialist with years of training and experience. For the patient, it can be painful, time-consuming and costly. Now a controversy has developed in the field of endodontics over an alternative new kind of root-canal therapy called the Sargenti technique, which is touted as fast, inexpensive and simple enough for any dentist to learn at a one-day seminar.

Endodontists perform root-canal therapy when the pulp—consisting of blood vessels, nerves and connective tissue within the roots of a tooth (drawing)—is damaged by loss of circulation or decay. Left untended, the damaged pulp would become a breeding ground for bacteria, leading to abscess formation and loss of the tooth. In the conventional method, the endodontist drills a hole in the crown of the tooth and removes the dead pulp with various small instruments designed to enter the narrow, often convoluted root canals. He usually fills the empty canal with gutta-percha, a gum-like material, and a sealer consisting largely of zinc oxide. Treatment of a single tooth may require two or three visits and cost from \$125 to \$250. For completion of the job, the patient may be referred to his own dentist to be fitted with a synthetic cap or crown, which may cost an additional \$150.

DEVICE

The Sargenti method of root-canal treatment, named for the Swiss dentist who devised it, has been spreading rapidly among U.S. dentists in recent years and differs from conventional therapy in two major ways. First, the dentist uses motorized devices, including one called the Giromatic, instead of the standard miniature hand-held instruments usually used to clean out the root canal. The device is said to simplify the task of pulp removal. Second, Sargenti proponents fill the root canal with a special paste, variously designated N-2, RC2A and RC2B, to mention a few of its trade names. The paste contains compounds of lead and mercury along with steroid hormones and paraformaldehyde. These materials are supposed to sterilize and protect the root canal against bacterial growth.

A Sargenti treatment usually can be completed in just one visit and costs as little as \$50 to \$95, not including the cost of a crown. The Sargenti advocates conduct day-long training seminars around the U.S. where, for \$105, any dentist can learn the technique, place an order for a Giromatic device—and become a member of the American Endodontic Society, the Sargenti practitioners' own dental specialty group.

Conventional endodontists, who may join the older, more select American Association of Endodontists only after stringent qualifying procedures, argue that root-canal therapy is simply too complex to be learned in a one-day seminar. They also say they are persuaded that the Sargenti method has never been proved effective by valid scientific studies and that it may, in fact, be downright dangerous. They claim that the mechanical pulp removers are not as thorough as other instruments, and might even bore all the way through a tooth. And the Sargenti paste, they contend, is even more hazardous.

Sargenti-method critics further insist that the lead and mercury compounds in the filler paste pose a toxic hazard if they leak out of the root canal. The paraformaldehyde, which resembles embalming fluid, is highly damaging to tissues, they charge. Several endodontists have reported seeing patients with injuries to bone and oral tissues following Sargenti root-canal treatment, and practitioners of the technique have been the targets of a growing number of malpractice suits. "I've been called as an expert witness in about a dozen of the cases in the last two years," says Dr. Dudley Glick, professor of endodontics at the University of Southern California.

In a recent malpractice case, a woman was hospitalized because part of the palate at the roof of the mouth had dissolved away following treatment. The patient required plastic surgery to undo the damage. More commonly, the Sargenti method has been blamed for damage to the area around the tooth itself. "We've observed patients who've arrived with acute pain and root end infection associated with bone loss," says Dr. Samuel Lips, director of dentistry at the Bronx-Lebanon Hospital Center in New York. "They routinely arrive in distress and it's usually impossible to save the tooth."

PAIN

Sargenti proponents contend that the paste contains only small amounts of potentially toxic substances and that, properly applied, it should remain confined to the root canal. They also insist that the gutta-percha used by the more orthodox endodontists accounts for the postoperative pain often associated with conventional treatment. "There is," says Dr. Ramon Werts of Fullerton, Calif., a Sargenti-method dentist and executive director of the American Endodontic Society, "rarely, if ever, any pain experienced in the Sargenti technique."

The U.S. Food and Drug Administration has not approved the Sargenti paste for nationwide sale, and is now considering an outright ban. In California, health officials have forbidden the two major suppliers in the state to continue selling the paste, and the California Dental Association has advised all its members against its use. Until the paste is banned nationally, however, the Sargenti practitioners can ask any pharmacist to mix up a batch on prescription whenever they need some.

ATTACHMENT 4

COMMENTARY ON "AT THE ROOT OF THE TROUBLE," NEWSWEEK, OCTOBER 6, 1975

Certain statements in the above entitled article appearing in Newsweek magazine have the potential for misinterpretation and could lead to certain misconceptions about the "Sargenti Method of Endodontics". Following are clarifications of specific items numbered in the original article:

1. The statement that root canal therapy is a "job for a specialist", will be refuted by virtually every general practitioner in this country. Root canal therapy is simply another part of dentistry which every dentist is taught in dental school and is a phase of dentistry which should be available to every patient regardless of whether the dentist is a general practitioner or one who limits his practice. It does not require "years of training and experience" to perform even complicated root canal therapy. It only requires an interest and desire on the part of the dentist to be able to treat all situations.

2. The Sargenti Method is not "a new kind of root canal therapy". It has been used in Europe and virtually every country of the world for approximately twenty-five years. It is new to this country in the sense that it has only been introduced here on an organized basis during the last five years through the efforts of the American Endodontic Society. It is an established proven technique and millions of teeth have been saved throughout the world by this usually simpler, faster and often more inexpensive procedure.

3. In *all* methods the dentist drills a hole in the crown of the tooth and removes the pulp with various small instruments. The difference in the Sargenti Method is that these *same* small instruments are held by a small handpiece rather than by the fingers, providing more access, greater visual ability, and more rapid preparation.

4. In the Sargenti Method both the standard miniature hand-held instruments as well as the Giromatic and other motorized instruments can be used. The Sargenti Method does not require a dentist to use motorized instruments. The same procedure can indeed be accomplished by the identical approach as so-called conventional endodontia suggests. Our approach is that the mechanical instrumentation of the canal does truly simplify the task of pulp removal.

5. Of the three materials mentioned only one, "N2", is a trade name. The RC2A and RC2B formulas are simply a list of ingredients which can be prepared by any pharmacy.

6. The statement by the American Association of Endodontists that "root canal therapy is simply too complex to be learned in a one-day seminar" is nonsense. Every dentist in practice today has been instructed in endodontic treatment in dental school and the dental practice act of every state permits him to perform this therapy. The one-day seminar simply presents the basic information of a slightly different approach to what is already known and understood by every dentist.

7. Ample "valid scientific studies" have been completed in universities throughout Europe and by independent qualified researchers in the United States. The opponents of this technique are prone to suggesting that European research is not valid, and thus have overlooked the considerable scientific information that has been available for many years.

8. Lead and mercury compounds are widely used in medicine and dentistry. Mercury, for example, is one of the principal ingredients in every silver amalgam filling placed in a tooth. Recent studies have shown that the mercury in a silver amalgam filling has a significant "leakage factor" and can even be found in the soft tissue surrounding the tooth many years after the filling has been placed. Mercury compounds are widely used in over-the-counter preparations such as Preparation H, and vaginal creams and jellies. Any substance can be a toxic hazard in the improper dosage. The amount of these compounds included in

the root canal formula are of such minute quantity that they cannot possibly pose a hazard, even assuming that the toxic hazard is cumulative in effect.

9. Any dentist will readily attest to the fact that he has seen patients with injuries to bone and oral tissues following *any* root canal treatment. There have been without question many more malpractice suits regarding conventional endodontia as there have been with the Sargenti treatment. The malpractice case specifically referred to would reflect a gross abuse of both the technique and the material. An example of the misuse of a commonly used drug that can cause sloughing of tissue, bone denuding and osteomyelitis when placed on the gums is the common aspirin. The improper use of this drug should be condemned. We all know the benefits of the proper use of this drug. Any drug or material used improperly can be debilitating. The American Endodontic Society has documented the treatment of more than 2,000,000 teeth with this technique during the past few years with a percentage of success exceeding 95%, which is higher than any reported studies with conventional endodontics.

10.¹

11. It is interesting to note that a spectrographic analysis of gutta percha used by the "more orthodox endodontists" also contains such materials as lead, as well as cadmium which is also a poisonous material.

12. In California, health officials have declared several suppliers of the paste to be "manufacturers" rather than providing it on a prescription basis. It is perfectly legal for a dentist to write a prescription and have it compounded by his pharmacy in the State of California.

13. The statement that the California Dental Association has advised all its members against its use is simply not true. The California Dental Association recently sent a letter to its members advising them of certain Food and Drug regulations relating to the *manufacturing* of drugs. This in no way represents a policy or position of the California Dental Association. None of the materials that are used in endodontic therapy including gutta percha and any of the cements, pastes or medicaments have ever been approved by either the State or Federal Food and Drug Administrations. The selection of the Sargenti formulation is discriminatory. Since there are only approximately 500 "endodontists" in the entire country, it is obvious that they cannot perform all of the root canal therapy that needs to be done. Every general practitioner must have available in his practice a technique which enables him to save teeth in as rapid a period of time as possible so that the fee for this treatment can be as reasonable as possible.

The American Endodontic Society does not contend that any other technique is necessarily inferior. We only contend that the so-called Sargenti Method of endodontia is another way of performing usual and customary treatment for patients which oftentimes enables the dentist to save an otherwise hopelessly involved tooth from extraction.

ATTACHMENT 5

GUTTA-PERCHA POINT PROPERTIES

A REPORT OF THE COUNCIL ON ENDODONTIC THERAPEUTICS

Because of the lack of detailed information on the components of gutta-percha, the Council on Endodontic Therapeutics of the American Endodontic Society, submitted samples of five commercial brands of points for spectrographic analysis.

The samples were first checked for sterility. Details are not included in this report, but twelve (12) samples of each type of point were incubated 14 days, 6 each in two types of media. One sample each of No. 1 and No. 2 failed the sterility test. The test was in compliance with USP XVIII except in regard to number of samples tested (required 40 instead of 12 each).

After the sterility test, it was determined that none of the samples show appreciable weight loss at 220° F. and were therefore dry.

A group of samples from each package were ashed at a very high temperature. The ash was then spectrographically analysed for metal content. The per cent composition appears as Table I, with the major constituents expressed as per cent by weight, based on the most probable compound. Trace elements are expressed as such.

The table is enlightening as it details similarities in samples 1, 2, and 3, and in samples 4 and 5. It is further interesting to note that the ash of numbers

¹ Item not provided.

1-3 was yellow, while that of 4-5 was stark white. Arsenic was detected in none of the samples, but possibly could be detected at a much lower level with alternate techniques. The most significant finding among the trace elements was the relatively high Cadmium concentration, since many of the salts of this element are as toxic as some arsenic compounds.

It was also interesting to note the presence of a small amount of lead in each of the samples tested.

1. Mynol Gutta-Percha Points, 100 medium pink in sealed carton, Manufactured by Mynol Chemical Co., Broomall, Pa. 19008.

2. Moyco Nerve Canal Points, 150 x-fine in sealed carton. Manufactured by J. Bird Moyer Co., Inc., Philadelphia.

3. Kerr Gutta-Percha Points, Medium, packed in snap plastic box. Manufactured by Kerr Manufacturing Co., Detroit, Michigan.

4. R & R Gutta-Percha Points, Medium Fine. Packed in snap plug capped vial. No manufacturer shown.

5. Union Broach Gutta-Percha Points, 50 in snap plug capped glass vial. Manufactured by Union Broach Co., Inc., Long Island City, New York 11101.

TABLE I.—POINT ANALYSIS
[All numbers are percents by weight]

	1	2	3	4	5
Gutta percha, percent.....	24.0	25.5	25.3	25.8	24.3
Zinc oxide, ZnO.....	60.6	59.4	60.4	73.9	70.7
Titanium dioxide TiO ₂	12.7	12.4	11.3	-----	-----
Barium sulfate BaSO ₄	1.5	1.3	1.9	-----	3.3
Other,* percent.....	1.2	1.4	1.1	.3	1.7
Total.....	100.0	100.0	100.0	100.0	100.0
Trace elements:					
Titanium as TiO ₂				0.0039	.015
Strontium as SrSO ₄	0.16	0.19	0.023	ND	.13
Cadmium as CdO.....	.47	.54	.62	.028	.14
Silicon as SiO ₂.....	.079	.10	.14	.021	.045
Calcium as CaSO ₄.....	.042	.031	.056	.049	.11
Antimony.....	ND	ND	ND	ND	.71
Magnesium.....	.0049	.011	.011	.0057	.0079
Manganese.....	.0015	.0017	.0043	ND	ND
Lead.....	.011	.010	.018	.039	.0059
Tin.....	.0019	.0032	.0049	ND	ND
Aluminum.....	.0053	.0094	.0017	.0044	.0059
Copper.....	.00049	.00041	.00074	.00052	.0010
Iron.....	.00073	.0087	.010	.0088	.0077
All other metals.....	ND	ND	ND	ND	ND

*Trace elements detected are shown as percent by weight of the unashed points. The more abundant are weighed as the most likely compound, while the lesser elements are weighed as elements.

Note: ND means not detected; therefore, if present, must be a level lower than shown.

Mr. FOUNTAIN. As you know, FDA has consistently held that RC2B is a new drug. Do you dispute the FDA's contention that it is a new drug?

Dr. WERTS. I believe we do in the sense that, if they are going to say that RC2B is a new drug, then all other drugs dealing with endodontics should also be classed the same. Because there has never been a new drug application filed for drugs used in the conventional technique.

I think it is interesting to note that the materials which are used and which the gentleman who spoke earlier referred to as gutta percha, if you were to go to virtually every university in the country you would find that the endodontic departments there use a different approach and different medications.

For example, in certain aspects of the so-called conventional approach, drugs are used in the preparation of the canal. And then the canal is filled using gutta percha, but along with a cement or a paste

which in itself has similar ingredients to RC2B. None of these have been subjected to new drug scrutiny or approval.

Additionally, there is no commercial product known as RC2B.

This is a quotation. It is in reference to a specific formula which has not been produced commercially. It is being done on a prescription basis.

Mr. FOUNTAIN. If I understand you correctly, you maintain that it is something other than a drug.

Dr. WERTS. I would say that it is a drug, but whether it is old or new is a matter of terminology.

Mr. FOUNTAIN. It is a drug?

Dr. WERTS. It is a drug. And every material that is used in the body would be considered a drug also.

Mr. FOUNTAIN. But you are disputing the fact that it is a new drug?

Dr. WERTS. Yes.

Mr. FOUNTAIN. Is that the only basis for what you have told us?

Dr. WERTS. I would say so.

Mr. FOUNTAIN. We have had a quorum call, and we will recess for 10 minutes. When we come back we will resume our questions.

[Short recess.]

Mr. FOUNTAIN. The subcommittee will come to order.

Dr. Werts, on page 3 of your statement you state, and I quote in part: "The real responsibility for examining the safety and effectiveness of materials involved in dental treatment, however, lies with the various councils of the American Dental Association." And you further quote: "Unfortunately these councils have yet done no adequate research to either prove or disprove the effectiveness of RC2B or any other endodontic material."

Does this statement hold for new dental drugs placed on the commercial market without awaiting the filing or approval of a new drug application?

Dr. WERTS. I would say so, sir, because I have a number of materials with me which are not pertinent to be introduced as evidence. They are advertisements for various medicaments that are used in dentistry which have not had the new drug scrutiny.

I think that for instance the Accepted Dental Therapeutics that Dr. Cohen referred to, wherein he stated that N2 was classed in group D, interestingly enough he was showing the 1973-74 edition of Accepted Dental Therapeutics.

The 1974-75 edition eliminates totally the classification of group D. There is no group D any more that he was referring to. It has been totally eliminated by the American Dental Association.

While it is still true that the American Dental Association still lists the original N2 formula in a certain category, it is not a group D category. The Accepted Dental Therapeutics sets forth certain requirements for drugs or medicaments or materials used in dentistry, and interestingly enough, there is no section whatsoever on endodontics or endodontic materials in Accepted Dental Therapeutics.

This is principally the basis of my statement that they have not accepted their responsibility because they have not reviewed any of these others.

However, I do believe that this will change because there was a considerable amount of discussion on this very subject at the American

Dental Association meeting this past week in reference to the committee hearing on the Council on Dental Therapeutics. I think this matter will change.

One other thing I would like to say is this. I will go back to your previous question before the recess was taken.

In relation to the drug aspect of this, I would like to clarify the fact that we are not a sponsor of a particular drug. First of all, RC2B is not a manufactured material. There is no such thing as a manufacturing of this. The ingredients are compounded or put together by a pharmacy. But none of these pretend to be manufactured.

A new drug in my way of thinking would be some labeled product that is being sold by a specific manufacturer. This is not so in the case of RC2B. This term "RC2B" is just a handy nomenclature to refer to the particular ingredients that we suggest in our lectures as clinicians on a technique of dentistry that could be employed in root canal therapy. We are not sponsoring it. We do not have any intentions of doing it, nor desire to do it.

As a matter of fact, I think we would welcome a manufacturer to do this.

As you are well aware, the process of new drug applications is a very expensive one. As a matter of fact, 2 weeks ago Time magazine carried an article regarding a commentary by some pharmacologists who themselves were critical of FDA requirements, stating that today it requires an investment on the part of a sponsor or manufacturer somewhere around \$10 million to have a single new drug application approved.

Mr. FOUNTAIN. Do you take the position that the Food and Drug Administration has no jurisdiction over this drug?

Dr. WERTS. If the Food and Drug Administration has jurisdiction over this, then they also have jurisdiction over every other thing that is used in endodontics, and none of those have been reviewed by them.

Mr. FOUNTAIN. After having heard the testimony this morning, is it your opinion that the FDA should not have any responsibility over the subject matter of our discussion?

Dr. WERTS. No. I believe they do have that, but I believe that part of their decision must come from the judgment of professionals in the field. That is why I referred to the Council on Therapeutics.

I believe that first of all, in relating to anything in medicine and dentistry, the profession itself must research it and must know what it does, and then recommend it to the Food and Drug Administration, who then can interpret this material in light of the laws that are in existence. And then whatever judgment Food and Drug makes is based upon the profession's assay of the safety and effectiveness.

Mr. FOUNTAIN. Do you think the Food and Drug Administration should await recommendations or actions of the councils of dental associations before making a decision?

Dr. WERTS. I would say so. I would say that they should await this inasmuch as the method and material is so widely in use today that it would be extremely disastrous for them to take any position. I think they should see that safe and effective materials are used whether they have legal jurisdiction or not. This I think is their true function.

Mr. FOUNTAIN. Would you give us an approximation of how many patients a year are being treated with N2 and similar drugs?

Dr. WERTS. I can give you an approximation from the survey we made of the membership last year. At that time the members who responded stated that they had treated more than 2 million teeth in the period of 1970-74 using this, with a very high percentage of success. By the way, we do not pretend that we have a magic paste or that it is miraculous at all.

Mr. FOUNTAIN. Was this in response to a questionnaire?

Dr. WERTS. Yes.

Admittedly this is not a scientific survey. We could not visit every office of 8,000 dentists. You would need a clinical survey, but this is the only way one can assess the utilization of the material.

Mr. FOUNTAIN. Do you have a documented tabulation of the information that was received?

Dr. WERTS. We have the entire publication which is 100 pages long.

Mr. FOUNTAIN. Would you send it to the subcommittee?

Dr. WERTS. Yes.

Mr. FOUNTAIN. Without objection, the publication will be inserted in the record.

[As of December 24, 1975, the publication was not provided to the subcommittee.]

Mr. THOMPSON. You mentioned in your testimony that there are 662 certified endodontists. Is their primary function the treatment of root canal problems?

Dr. WERTS. Yes. As a matter of fact, this special status prohibits a dentist who limits his practice of dentistry from doing anything else. In other words, if a man says he is an endodontist and either has done so by virtue of the so-called "grandfather clause," or has spent extra time in post-graduate education and becomes an endodontist, that is all that he can do ethically. He cannot do crown and bridge work or dentures.

Mr. THOMPSON. Let me ask you a hypothetical question. If N2 were approved by the FDA as safe and effective, what would be the effect on the practitioners?

Dr. WERTS. The impact would be possibly a lessening of their total number of patients which they could treat.

The other aspect of this is of course that there are an increasing number of endodontists who are graduating from dental schools. With the economic situation as it is now, with perhaps not seeing a dentist as often as they should because they cannot afford it, and with an overabundance of specialists in the field, then it would have an impact on their economic aspects.

As a matter of fact, I would like to introduce this into the record. Mr. Chairman. It is a newsletter of the American Endodontic Society of a recent edition. It contains quotations from a tape recording officially recorded by the American Association of Endodontists at their meeting in New Orleans in April of this year. This tape recording contains comments by Dr. Glick who testifies here, as well as Dr. Herbert Schilder, another noted endodontist.

To indicate this aspect that you were questioning me on, Dr. Glick says, "It depends on how it affects us. In our area in Orange County, we get nothing but responses from men who are worried and concerned that this is going to engulf them and that they are going to be left with nothing except a bunch of N2 men working around them."

Also, relating to the other aspect of it, Dr. Glick further says—relating to the “slough of the palate”—

The thing is that it is possible for you to fill a canal and create pressure there and cause an embolism using a conventional technique. Yes, it is possible to have a slough of the palate or other tissue. Yes, because we have documentation. It has occurred, and the attorney is going to this and say, “Look, you cannot blame N2 alone when the same thing has occurred with the conventional technique.”

So our contention is that the frightening aspect of the palate dissolving away or a patient dying from an embolism really should not be considered because it can happen with anything that is misused. It relates to a misuse of the technique rather than an inherent problem.

Mr. FOUNTAIN. Your newsletter will be received by the committee. [The newsletter referred to may be found in the appendix.]

Mr. FOUNTAIN. We all admit that medicine is not an exact science. When we start using drugs and chemicals like that, and inject them into the body, we have a different situation.

You stated that the new president of the American Dental Association is a member of the American Endodontic Society. What are the requirements and conditions of membership, and does membership mean that the member endorses or uses these drugs in his dental practice?

Dr. WERTS. In answer to the last part first: No, sir, it certainly does not; anyone can be a member. I am quite aware that we have some members who are members of the American Association of Endodontists as well. I am sure that the reason they belong is so that they can receive our publications, and see what we are saying. This is perfectly understandable.

As far as the president is concerned and the new president-elect, he has been a member for 3 years which means that he has renewed his membership. In other words, he has sent his money in because, as was stated previously, members who attend courses presented by the American Endodontic Society do indeed receive 1 year's membership.

At the end of that year they must then renew their membership. One would make the assumption, sir—and we cannot prove it without asking him personally—that if he did renew two times, then he was probably using the technique or was interested in it.

Mr. FOUNTAIN. How does one become a member?

Dr. WERTS. By either attending a lecture or simply joining or presenting an application.

Mr. FOUNTAIN. By submitting an application?

Dr. WERTS. Yes. They do not have to have done so many cases.

Mr. FOUNTAIN. They do not have to attend any meetings; they simply have access to such information?

Dr. WERTS. That is correct.

Mr. FOUNTAIN. Has the president of the American Dental Association ever attended any of your lectures?

Dr. WERTS. I am sorry, sir, I do not have that information. This happened yesterday. I only heard about it yesterday evening, so I really do not know.

Mr. FOUNTAIN. When was the American Endodontic Society created?

Dr. WERTS. It was formed in 1969 by a group of us who had been using the method which is being discussed here today.

We felt that there was a need for a technique in this country because none of the dental schools were teaching a simplified approach to root canal therapy. We felt that there were many teeth that were being extracted that should not be extracted simply because the patient could not afford it, or the dentist could not afford to take the lengthy time of treatment of the more conventional technique in order to save that tooth.

So, it was formed at that time principally for the general practitioner to perform a more simplified approach.

Further, while this so-called Sargenti method is discussed, this is not the entire interest of our organization.

We have presented much material and other techniques relating to endodontics which have nothing to do with Sargenti. These are techniques of stabilization and so on. This is not our total scope of our presentation.

One further thing I would like to say, getting back briefly to the drug aspect of it, is that in the field of endodontics—which is children's dentistry—one of the most widely used techniques and which is taught in virtually every dental school in this country, involves the use of a material called formocresol, which is a specific technique. There is a specific technique referred to as a formocresol pulpotomy which, in the treatment of children's teeth, utilizes formaldehyde. This is the most widely used endodontic technique in deciduous teeth in this country.

Here again, formocresol has no new drug application whatsoever. As a matter of fact, the bottle that it comes in has a skull and crossbones on it showing that it is poisonous material, and yet it has been put into millions and millions of children's teeth with no adverse reaction whatsoever.

Also relating to the drug aspect of this material, we have heard criticism of the mercury component. I would say that we must remember that every silver filling that goes into the mouth has a very much larger amount of mercury present than does our root canal system.

Also there is mercury in a very similar proportion in such over-the-counter products as Preparation H. The application of Preparation H in direct contact with the tissue of the body would have a much greater potential for toxic reaction if there were such a thing.

Mr. FOUNTAIN. I do not think we are saying that mercury is excessively hazardous. I think the witnesses have concentrated on lead and paraformaldehyde.

Dr. WERTS. Yes.

Mr. FOUNTAIN. Are your members of the society all specialists in the endodontic field?

Dr. WERTS. No.

Mr. FOUNTAIN. Are you an endodontist?

Dr. WERTS. No.

Mr. FOUNTAIN. Do you engage in that work?

Dr. WERTS. Yes.

Mr. FOUNTAIN. For how long have you engaged in that work?

Dr. WERTS. Ten years.

Mr. FOUNTAIN. Did you specialize in that in the course of your education?

Dr. WERTS. No; at no time. I was educated at the University of Southern California. As a matter of fact, Dr. Glick was one of my professors. I received a good education, I would consider, in endodontics. I practice the techniques that I learned there. But immediately after graduation I learned of this other technique and began employing it also.

In my own practice, and I am speaking only for myself now, I began to see as I utilized both techniques the superiority in my own opinion of the one that I am talking about today.

Thus, within a year I abandoned the other technique entirely and since that time have used this one only.

Mr. FOUNTAIN. Why was the American Endodontic Society created?

Dr. WERTS. I mentioned it was formed principally to provide educational materials and courses for the general practitioner to learn a more simplified approach to root canal therapy.

Mr. FOUNTAIN. You have in mind the use of other materials?

Dr. WERTS. I would say this would be the best material. We have no preconceived notion but that further research might not indeed develop a better material. We would be the first to embrace that at that time.

Mr. FOUNTAIN. Are you a member of the Association of Endodontists?

Dr. WERTS. No.

Mr. FOUNTAIN. Since the American Association of Endodontists was already in existence, why was it necessary to form a second group?

Dr. WERTS. Principally because they were not providing courses on more simplified approaches.

It is interesting to comment that inasmuch as we have lectured widely through the country to many dentists in small towns and so on where there are no specialists available, men who have been in practice for 15 or 20 years have never done a root canal therapy in their lives.

In questioning them about this, we find that the reason is that the education they had in school was inadequate and they were not prepared to do it, so they did not do it. They extracted the tooth.

I must comment in all honesty that today the situation has improved. I would say today the education of the undergraduate student is far superior in many schools to what it was even 10 years ago.

But those practitioners, who are the majority, who have been in practice for a long period of time have not been exposed to these more simplified approaches.

We do not claim, by the way, that the technique or material that we are talking about is superior necessarily to any other method. We only contend that it is at least as good and takes a lesser period of time.

Mr. FOUNTAIN. I think you have partially responded to my next question.

The Food and Drug Administration has said that the American Endodontic Society was formed to promote drugs of the N2 type and the Sargenti method. Is this substantially correct?

Dr. WERTS. This is only partially correct.

To be sure, we have promoted this one area. We have endorsed courses on this particular method, but here again, I would comment that other aspects of dentistry are discussed, not just that.

Mr. FOUNTAIN. What other aspects of dentistry do you discuss?

Dr. WERTS. We discuss, for example, how to prepare a crown to receive a restoration following endodontic treatment. We discuss how to bleach a tooth that has turned dark as a result of endodontic therapy. None of these techniques relate to Sargenti per se.

Mr. FOUNTAIN. What is the relationship—financial, commercial, scientific, and otherwise—between the American Endodontic Society, or any of its officers, and the following three firms which are known to have been shipping RC2B to dentists: Steri Kem, Inc., Shar Don Labs, and Momart, Inc.?

Dr. WERTS. I can only speak for myself in this respect.

There is no commercial relationship with myself with any of these companies. We receive no compensation from them. We receive no kickback. Here again the press release that I read seems to imply that there is a sort of blackmarketing of this material going on.

The presentation of the material in our clinical lectures is simply this: It is a formula and you may take it to your pharmacy and have it compounded.

Admittedly, things have changed in the past, but in the most recent I would say 4 years, the formula referred to as RC2B, a specific formula, has not varied one iota. I would also comment as far as changes of formulas. One of the principal endodontists in this country, Dr. Louis Grossman, who is referred to as the grandfather of endodontics in this country and respected as such, has himself changed the formula that he recommends for cementing gutta percha with.

Mr. FOUNTAIN. Does he use the formula which you recommend?

Dr. WERTS. No, sir, he does not. He has his own formula.

Mr. FOUNTAIN. I understood that the three companies to which I referred were sending those compounds out.

Dr. WERTS. I believe that is so.

Mr. FOUNTAIN. What are your membership dues?

Dr. WERTS. The dues are \$24 per year.

Mr. FOUNTAIN. What does the lecture course, or whatever course you give, cost?

Dr. WERTS. This would vary depending upon the sponsor. The course has been sponsored, for example, by component dental societies of the American Dental Association. It has been sponsored by Academy of General Dentistry groups, study clubs, and this sort of thing.

The courses that are officially endorsed by the American Endodontic Society, the fee for the participant is \$105 and of this \$105, a portion of that—\$24—is for dues in the society for 1 year. So that he receives that as a portion of his tuition.

The fee of \$105 is in the same realm of fees for almost all graduate courses. That is, 1-day courses which is the way most postgraduate courses are held these days.

It is in the average amount which is charged.

Mr. FOUNTAIN. Is yours a 1-day course?

Dr. WERTS. Yes; it is a 1-day course.

Mr. FOUNTAIN. Over what period of time; how many hours?

Dr. WERTS. Nine to five usually. We do not pretend that we teach all of endodontics in 1 day by any means. This is just teaching the specific approaches used in this technique.

Mr. FOUNTAIN. Who is the sponsor of the RC2B formulation?

Dr. WERTS. There is no sponsor of the RC2B formulation to my knowledge.

Mr. FOUNTAIN. You do not know who is shipping it?

Dr. WERTS. Not other than any pharmacy. Any pharmacy can make up the material on a prescription basis.

Mr. FOUNTAIN. Who was giving out the prescription cards at the lectures?

Dr. WERTS. At various lectures we have presented the cards which have the formula on them. These cards were prepared by Steri Kem Co., for example, out of convenience of the dentist so he does not have to copy the formula down from the slide that we present on this. They just prepared some cards for us. So we let them do that.

The manner in which we state this at the courses is that any pharmacist can prepare this. The card that is given out is just an example of one company.

Mr. FOUNTAIN. Who determines the amount of the drug's components?

Dr. WERTS. The RC2B formula was a formula developed by Dr. Sargenti.

I would say that this is one of the ironic aspects of the problem we face in this regard. While we say that any pharmacy can prepare this, there are some pharmacists who simply do not have the mortar and pestle that they used to have, and they are just moving pills from one bottle to another, and they do not have the expertise or the equipment to properly mix the material.

As a matter of fact, it was referred to in the one case where they found a significantly higher percentage of lead in the material than what the formula lists. I would assume that this could possibly be due to an inaccurate preparation of it by the pharmacist, whereas some companies, like the Steri Kem Co., have had excellent quality controls on the preparing of this prescription. They have made sure that every ingredient that goes into it has the proper safety and quality, and they have compounded it in a very scientific way, and yet they are prohibited from having a commercial product.

Mr. FOUNTAIN. You testified that you favor FDA's use of an advisory committee in this instance. Would you accept and abide by the recommendation of the advisory committee?

Dr. WERTS. I do not think necessarily that I would, no.

I would say that here again the makeup of the advisory committee is certainly sometimes open to question. I would say; for example, that a hearing from 9 a.m. to 12 m. on November 12 is in no way going to be able to give that body every bit of information that it needs to make a final decision on a certain material.

I favor the use of advisory committees, not just in this particular area, but in all areas, because I do not believe that FDA alone has

the expertise, particularly in the clinical aspect, in the use of any material.

Mr. FOUNTAIN. I am talking about the FDA Advisory Committee composed of some of the most learned people in the field outside of the FDA.

Dr. WERTS. This is another area where it is very difficult to discuss the problem because what is the definition of an expert? Would you consider, for example, a man who has never used the material in a clinical setting on a large number of patients to be an expert on this subject?

I personally do not feel that some of those who oppose the techniques have ever used the technique, or have ever tried it on a large number of patients. They may have seen isolated cases, but they have not had the same clinical experience, for example, that myself or others that have used it for at least 10 years have had. Therefore, I do not believe that they can be considered expert in that field.

Mr. FOUNTAIN. When did you first learn of the technique?

Dr. WERTS. About 10 years ago.

Mr. FOUNTAIN. Where?

Dr. WERTS. I learned about it from a dentist who came here from England, as a matter of fact. He came over to give a lecture at our dental society and he had with him a copy of Dr. Sargenti's book. I learned about it at that time.

Mr. FOUNTAIN. Is any charge made for the information contained on the preprinted card?

Dr. WERTS. No charge for the card; no.

Mr. FOUNTAIN. Only for the course.

Dr. WERTS. That is correct. The newsletter, for example, and various other publications of the Society are sent to the members at no charge. That is included in the yearly fee of \$24.

Mr. FOUNTAIN. Who selects the pharmacy which fills the prescription or makes up the formula?

Dr. WERTS. The dentist himself.

Mr. FOUNTAIN. You have no financial interest in any pharmacies at all?

Dr. WERTS. None whatsoever.

As far as this is concerned, I would say you are talking about a specific thing. Every dentist in practice today uses different materials. There is no one standard of practice.

For example, as I stated, every endodontist, that is, not everyone, but there are many different approaches. One school will advocate a certain medication. One school will then advocate using gutta percha, but with a technique of heating it and pressing it into the tooth, another says you do not have to heat it, you have to dip it in chloroform. I would certainly assume that chloroform would be considered a drug. And yet there is no new drug application for any of these materials that are used in these various schools of thought in dentistry in the field of endodontics.

Mr. FOUNTAIN. Some of these could be old drugs and, under the "grandfather clause," could escape the new drug application.

Dr. WERTS. That is quite true. Many have changed the formulations over the years. This is also very interesting. I think the FDA would

agree with this, that when you do file a new drug application, you must give a specific formula.

If you change that formula by one fraction of a percentage point during the investigational status or at any time after that, you have lost your status. It is a newer drug. It is a different material. And yet suddenly we are being classified with a material that was declared a new drug in 1962.

By the way, that declaration at that time was due to a considerable amount of pressure placed on the Food and Drug Administration by the then president of the American Dental Association, a dentist by the name of Dr. Ostrander, who happened to be an endodontist.

Mr. FOUNTAIN. I think, in essence, Mr. Levitas and I have said this, but I will continue. You said that RC2B was safe and effective. We have heard contrasting statements from others in the field, including some here this morning.

I will repeat that this subcommittee is not qualified to decide this particular matter. It may be that RC2B is in fact safe and effective. We do not know, but that is not the question at issue here; although we are, as private citizens, extremely interested in the matter.

I am personally interested in the subject because I am going into this procedure myself, and Congressman Fuqua said he was becoming a little bit more disturbed about his meeting Monday for some root canal work.

The only question here is whether it is a new drug within the law—that is, is it a drug that is not generally recognized as safe and effective by qualified experts, those who by training, and by experience are qualified to evaluate the safety and effectiveness of drugs. If it is not so recognized, then FDA has no choice in the matter. They must enforce the law and ban the drug until it approves an NDA for that drug.

Whether or not there is general recognition of safety and effectiveness is a provable fact. Our past hearings have disclosed that, in general, the courts have held that a drug is not generally recognized as safe and effective if there is a genuine and responsible difference of opinion among the qualified experts concerning the safety and effectiveness of the drug.

In addition, the courts have said that in the absence of a body of competent scientific and medical literature concerning the properties and use of a drug from which the medical profession can conclude that it is safe and effective, the drug cannot be considered to be generally recognized as safe and effective.

Does such a body of literature exist for N2-type drugs?

Dr. WERTS. I would say that there is a considerable body of literature that shows the safety and effectiveness; whether it is adequate in the eyes of FDA, I do not know. The material has not been submitted to them because of the fact that no new drug application has been submitted for RC2B, and there is no commercial firm that is interested in doing it simply because of the tremendous cost involved.

Mr. FOUNTAIN. You have submitted testimonials?

Dr. WERTS. My understanding is that something was submitted in the past. I had no knowledge of that at the time.

Mr. FOUNTAIN. In your testimony on page 2, you said that this was a social problem. You said that adequate scientific documenta-

tion was available and would be submitted to the committee if requested.

If you have such documentation, the subcommittee would welcome it.

[As of December 24, 1975, no documentation was submitted to the subcommittee.]

Mr. FOUNTAIN. If the Food and Drug Administration continues to hold it to be a new drug, then of course, you will have to submit your scientific documentation to them if you apply for a new drug application.

Thank you very much, Dr. Werts. We appreciate your presence here.

FDA requested that the following written statement of J. Richard Crout, M.D., be inserted in the hearing record in lieu of the further appearance of FDA witnesses on this matter. This statement represents FDA's position on its use of an advisory committee in the regulation of N2-type drugs.

[The statement referred to follows:]

PREPARED STATEMENT OF J. RICHARD CROUT, M.D., DIRECTOR, BUREAU OF DRUGS, FOOD AND DRUG ADMINISTRATION, PUBLIC HEALTH SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Mr. Chairman: My colleagues and I are pleased to appear at your request to discuss the past and present regulatory status of dental root canal sealers and the preparation known as N-2 and related products. I will also explain our proposed review of these products before our Dental Drug Products Advisory Committee. Our present posture must be assessed in the context of current controversy over root-canal procedures within the dental profession.

Root-canal therapy, which involves removal of the pulp inside a decayed tooth, is a widely used conservative and restorative treatment in dentistry today. Successful root-canal therapy makes extraction and replacement with a false tooth unnecessary. Conventional root-canal therapy or endodontics is a specialized dental discipline which requires two years of special training and experience for board certification.

Over the past 25 to 30 years a controversy has evolved in dentistry over an alternative approach to root-canal therapy known as the Sargenti technique after its leading proponent Angelo Sargenti, D.M.D., of Switzerland. To our knowledge there are two main groups involved in this controversy. They are the American Association of Endodontists (AAE, board qualified and certified), which, according to their estimates, number approximately 2,000, and the American Endodontic Society (AES, general practitioners who have attended one-day seminars on the Sargenti technique). Of the approximately 120,000 dentists in the United States today, the AES states that 9,000 are considered members of the society. We do not know how many of these actually practice the Sargenti technique.

The Sargenti method of root-canal treatment may involve the use of motorized devices instead of the hand-held instruments usually used in the traditional method to remove the root canal pulp. After the root canal is cleaned, it is filled with a special paste which may contain several chemicals including compounds of lead and mercury, zinc oxide and eugenol, steroid hormones and paraformaldehyde. This material, which is purported to seal, sterilize and protect the root canal, is known as N-2 or RC2B. It should be noted that several of the ingredients used in the Sargenti method are also employed in the more conventional approaches to root-canal therapy.

The N-2 preparation is one of a number of dental materials which are widely used in the practice of dentistry but which have not been specifically approved as new drugs by the Food and Drug Administration (FDA). In accordance with congressional understanding, we have been cautious in applying the powers of the Federal Food, Drug, and Cosmetic Act to interfere directly with the practice of dentistry, medicine or pharmacy. As you know, a dentist or physician may, as part of his practice, write a prescription for a mixture of ingredients or compound such a mixture and use it in his practice. N-2 and related products are mixtures

like this which can be compounded readily by a pharmacist for a dentist as part of his professional activities.

The only new drug application (NDA) ever submitted to the FDA for an N-2 type preparation was for a Swiss product called AGSA Root Canal Sealer No. 2. It was submitted to the FDA in June 1962. The application did not include adequate information to permit review and approval. In particular it failed to provide evidence of safety and effectiveness in the form of adequate and well-controlled studies; consequently, the application was eventually withdrawn by the company in July 1967. FDA regulatory activity over the subsequent years restricted importation of the product, but did not deal with local compounding by pharmacies. More recently, the FDA has received complaints from segments of the dental profession alleging that the N-2 formulation or variations of it are being promoted on a nationwide basis. In response to these complaints, we initiated field investigations to determine if regulatory action was indicated. In addition, Dr. Howard Martin, D.M.D., an endodontist from Silver Spring, Maryland, was particularly active in providing FDA with useful information early this year.

Our investigations and Dr. Martin's information indicated that N-2 and related preparations are indeed being promoted at seminars which are conducted to teach a one-visit, root-canal-filling technique that utilizes this material. Dentists attending the seminars are provided with preprinted "prescription" blanks. These blanks have the N-2 type formulation printed on them. The dentist fills in his name, the amount needed, and mails the preaddressed card to one of several compounders and/or distributors of the product whose name appears on the card. The distributor in turn sends the preparation to the requesting dentist.

Under ordinary circumstances, FDA would not contest the practitioner's prerogative to write a prescription. However, a strong argument can be made—though it has not been tested in court—that distribution of the N-2 products in this matter does not constitute dispensing under a prescription in the traditional sense. On this theory, the shipping procedure would not be an exempt pharmacy operation but rather would constitute the marketing of a drug by or on behalf of a manufacturer.

For several reasons, immediate regulatory action was not considered the best course of action in dealing with the N-2 product. A number of factors could diminish the prospects of sustaining in court the position FDA has stated that the product is a new drug. First, N-2 is a combination of active ingredients which are individually well established and widely used in dental practice. The combination itself is viewed with considerable confidence by many dentists, though the Sargenti treatment is highly controversial. Moreover, although N-2 has been in use for a number of years, we have not until very recently received reports indicating that the material may pose a potential hazard.

We are dealing, therefore, with a combination of accepted ingredients that is used in connection with a mode of dental practice that has numerous proponents as well as critics. At the very least, these factors suggest that correction of the problem—if there is a problem—will require more than simple removal of the product from the market. We are, of course, prepared to apply the new drug procedures of the Act to marketed drug products, including dental sealers, especially if there is some evidence of a significant hazard to the public health. We are reluctant, however, to apply these procedures selectively to one group of such products in the absence of information that these products present hazards different from those used in "conventional" therapy.

The hazards that are said to be associated with the Sargenti approach and its associated sealer agents are those which arise from inadequate sterilization of the root canal and from excessive local tissue reaction and/or infection. Such reactions can be severe and jeopardize the tooth and the integrity of the oral cavity tissues. If indeed these hazards are verified and clearly associated with the N-2 and related formulations, the public health would dictate that they should be removed from the market and required to demonstrate their safety and effectiveness through the usual IND procedures.

This entire matter thus requires that a number of questions be resolved before additional regulatory activity is taken by the Food and Drug Administration. It appears to us at the present time that the essential feature of the professional controversy involved is not the availability or regulatory status of the products in question. Rather the basic controversy is over who is qualified to perform root-canal dentistry and what technique is required. Proponents of the Sargenti method claim that the technique can be easily learned and widely practiced, that

it is much less costly, requires fewer visits, and can be made available to a larger population than the "conventional" technique. The endodontists allege, on the other hand, that all of these claimed advantages can only be obtained at the cost of an unacceptable incidence of failures and adverse effects. We have seen little data on either side of this controversy. For example, we do not know whether the alleged adverse outcomes are due to the filling and sealing materials, to the motorized drills employed, or are, in fact, more frequent than may be expected with conventional methods. In the past, when FDA has been confronted with such controversial and complex issues, particularly issues relating to medical or dental practice, we have often consulted with our scientific advisory committees. These committees are composed of experts in the medical, dental and scientific communities, and such consultation has been very useful and often essential.

As an example, we recently sought such consultation on the safety and effectiveness of topical fluoride preparations for reducing the incidence of dental caries. From time-to-time controversy and questions have arisen regarding the safety and efficacy of these preparations, which have been on the market for a number of years. None of these preparations was the subject of a new drug application, but after careful consideration of the data at hand, including recommendations from our Dental Drug Products Advisory Committee, the FDA concluded that these products could continue to be marketed without NDA approval on the basis that they are generally recognized as safe and effective. This determination was announced in the *Federal Register* of May 14, 1974, a copy of which will be submitted for the record.¹

In line with this general approach and other precedents, we have decided to seek the advice of the Dental Drug Products Advisory Committee before making a final Agency decision in regard to N-2 and related products. This approach is consistent with past Agency practice, and with a policy we believe to be sound. Proposed regulations governing FDA Administrative Practices and Procedures, published in the *Federal Register* on September 3, 1975, specifically point out that a public advisory committee "shall be utilized to conduct public hearings on matters of importance that come before the FDA, to review the issues involved, and to provide advice and recommendations to the Commissioner on such matters." Our Dental Drug Products Advisory Committee, in particular, was established to review and evaluate "... available data concerning safety and effectiveness of marketed and investigational prescription drugs for use in the practice of dentistry." Such committees are established to advise the Commissioner specifically "... on any particular matter involving a human prescription drug pending before the FDA, including whether the available data and information are adequate to support a determination that: ... A particular drug meets the statutory standard for proof of safety and effectiveness necessary for approval or continued approval for marketing. [and] A particular drug is properly classified as a new drug, an old drug, or a banned drug." Thus, "Any matter involving a human prescription drug under review within the Agency may, in the discretion of the Commissioner, be the subject of a public hearing ... High priority for such hearing and review by the appropriate standing technical advisory committee for human prescription drugs shall be given to ... : Marketed drugs ... which pose newly discovered safety hazards, or which are the subject of major scientific or public controversy, or which may be subject to important regulatory actions such as withdrawal of approval for marketing"

All of the criteria established by the Federal Advisory Committee Act and by Agency regulations for committee review are met by the matter in question. After receiving the committee's views, FDA will be in a stronger position to determine the soundest course of action to follow. Consultation with the advisory committee will strengthen the scientific basis for whatever regulatory action FDA may take. Moreover, participation by the scientific community enhances the credibility of Agency decisions, and is particularly important in a sensitive matter which cuts deeply into the practice of dentistry and the cost and availability of health care. Any regulatory decision is more readily accepted if it has the endorsement of leaders in the medical, academic, and scientific communities.

Consultation with a standing advisory committee with expertise in the precise area of concern helps establish a full administrative record and affords fair treatment to all affected parties. We have placed the N-2 matter on the agenda for the next meeting of the Dental Drug Products Advisory Committee, which

¹ As of Dec. 24, 1975, the subcommittee was not provided with this material.

is scheduled for November 12, 1975, and have invited both the opponents and proponents of these drugs to present their views before this committee. A memorandum setting out the questions on which we are seeking the advice of the committee is submitted here for the record.

You may be assured that we are anxious to resolve this matter as rapidly as possible. However, our first responsibility is to assure that the ultimate decision is legally and scientifically correct and in the best interests of the public health. We, therefore, believe it is appropriate to take the time necessary to accomplish this. We will be happy to keep you abreast of our actions as they occur.

My colleagues and I will be pleased to answer any questions you may have.

Mr. FOUNTAIN. I am placing into the record pertinent documents from the files of the Food and Drug Administration.

[The documents follow:]

MEMORANDUM OF CONFERENCE

(September 21, 1971, 9 a.m. to 9:45 a.m.)

Between: Dr. Angelo Sargenti, D.M.D., Locarno, Switzerland and William J. Gyarfas, M.D., Director, DSDDP; Frederick J. Grigsby, M.D., Deputy Director, DSDDP; George W. Wade, D.D.S., Dental Officer, DSDDP; Clarence C. Gilkes, D.D.S., Dental Officer, DSDDP; Joseph M. Renna, D.D.S., Dental Officer, DSDDP; Clarence M. Nealey, Food and Drug Officer, DSDDP; John R. Carr, D.D.S., DESI; Donald Plumb, Food and Drug Officer, Office of Compliance.

Subject: N-2 root canal sealer.

Dr. Sargenti thanked us for the opportunity to meet. He mentioned that he has just completed a tour during which he had lectured on his technique on the use of N-2. (Some of the places mentioned were Chicago, Philadelphia, Delaware, Boston, California.)

Dr. Sargenti then spent approximately 5 minutes shuffling papers (and reprints) on to Dr. Gyarfas' desk, on surrounding chairs and on the floor.

He then proceeded to read portions of letters from dental organizations and from individual dentists across the country.

He said that he realized that this could be considered as mere testimony but added that this country (U.S.A.) is a "dentally underdeveloped nation" in the treatment of root canal problems when compared to Switzerland.

He proceeded to give a lengthy dissertation on the need (as he saw it) to correct the problems (as he saw them) and proceeded to quote figures relating to the large number of edentulous people in the U.S.A. as contrasted to the few in Switzerland where his product is widely used.

He proceeded to give a long-winded (and somewhat irrational) criticism of the present state of Root Canal Therapy in the U.S. Some of the statements made by Dr. Sargenti were:

His material is for the obliteration of the root canal and is a hard material. (He passed around a sample of a hard pink substance in a plastic sac.)

That he has a solution for all our problems in root canal work.

That approximately 25 different formulations had been used and that they had all produced the same good results. He said that these were basically zinc oxide and that some date back to about 6 years ago.

FDA is influenced by falsified information.

That he has other connections.

He then asked if there were any questions.

Dr. Gyarfas gave him copies of the pertinent sections of the Food, Drug and Cosmetic Act and the Federal Regulations.

Dr. Sargenti showed some knowledge of the Food, Drug and Cosmetic Act and stated that he knows most of it from memory. He expressed the idea that we are denying the dentists in this country the use of a "new Product" (by these regulations).

Since Dr. Sargenti said that the N-2 stayed within the root canal, Dr. Wade asked what purpose the formaldehyde served. Dr. Sargenti's answer was evasive and he could not be pinned down.

Dr. Gyarfas explained that we are not denying anything to dentists or to dentistry—that our purpose is to protect the public—that no clinical evidence was

presented to show the safety and efficacy of the drug(s) and that this is a New Drug which requires such evidence.

Dr. Carr explained (among other things) that the Council of the American Dental Association (as well as many foreign countries) condemns the use of formaldehyde in such preparations.

Dr. Sargenti said that we have been misinformed and that he wanted to inform us on this important problem of Root Canal Therapy (no explanation of the formaldehyde was given by Dr. Sargenti).

Dr. Gyarfas again expressed the need for well conducted trials in order to demonstrate the safety and efficacy with controlled scientific data—and that he (Dr. Sargenti) would have to abide by the new drug regulations and procedures.

Dr. Sargenti got very emotional at this time and it became difficult to follow his line of thought. It appeared that he was threatening some type of legal action.

Dr. Gyarfas attempted to restore order and to calm Dr. Sargenti down and adjourned the meeting when Dr. Sargenti became even difficult to understand.

Dr. Gyarfas then again reminded Dr. Sargenti that no evidence had been presented to support the product and that the drug cannot be imported into the U.S.A. or be in interstate commerce without an effective Notice.

JOSEPH M. RENNA, D.D.S.

Los Angeles District (HFR-9240), January 14, 1975.

Attn: Mary M. Levetere.

Prescription Drug Compliance Branch (HFD-313), Division of Drug Labeling Compliance.

Review of EIR's from Steri Kem (068-182H) and Shar Don (067-368H) for N2 production.

As we discussed by phone (12/23/74), this memorandum will serve as an update on the status of known N2 type products currently being marketed.

The use of root canal filling cements containing zinc oxide, eugenol, phenyl-mercuric borate, paraformaldehyde, lead tetroxide, prednisolone, and hydrocortisone and the technique used for their administration has become a very controversial issue among the dentists in this country.

These type preparations are similar in formula to an original imported product "N2," originally produced by Dr. Angelo Sargenti, a European dentist. The AGSA Distributing Company in New York submitted an NDA for "N2" in June, 1962. Although numerous reviews were made by the FDA of data submitted to this NDA for several years, the drug was never found to be proven safe and effective for the recommended use. The main reason for non-approval of the NDA was that the company never submitted adequate and well-controlled clinical studies to demonstrate that the drug is safe and effective. Most of their data consisted of testimonials, an unacceptable substitute for adequate and well controlled studies. Consequently, the application was withdrawn by the company in June 1967.

Since that time, "N2" has had a history of changing composition and/or name depending on the supplying firm and the time the product was purchased.

We are currently aware of three firms involved in the production and/or distribution of N2 type products under the name RC-2B; they are Steri Kem (Whittier, Calif.), Shar Don Labs (Thousand Oaks, Calif.) and Mormort, Inc. (Valley Stream, N.Y.).

To our knowledge, the product is promoted only by the American Endodontic Society which is an organization formed specifically for this purpose. Their method of promotion consists of conducting seminars at which pre-printed "prescription" blanks are provided the attending dentists. These blanks have the "N2" type formulation printed on them and the dentist simply fills in his name, the amount needed, and mails the pre-addressed card to one of several manufacturers and/or distributors of the product whose name appears on the card. We have no information regarding who is responsible for the printing of these cards.

It is our position that distribution of these products in this manner does not constitute dispensing of a drug via a prescription in the traditional sense. In our view, a prescription is a written expression initiated by a licensed practitioner to provide his patient with a specific quantity of a drug to be used under his supervision. Thus, exemptions for pharmacy operations do not contemplate a manufacturing order for goods to be delivered to a licensed practitioner for ultimate dispensing by him.

Our dental experts feel the use of paraformaldehyde, lead, hydrocortisone, and/or prednisolone (alone or in combination) in dental products of this type has *not* been demonstrated to be safe and effective, and therefore these type preparations are still considered new drugs as defined in 201(p) of the Act.

On January 7, 1975, a conference was held between our dental experts and two endodontists at their request. They stated that they have copies of studies which demonstrate that N2 has had adverse effects on animals.

This material will be reviewed by us and based on the conclusions we will be in a better position to determine what course of action we will pursue in this case.

We will inform you of the results of the medical review upon its completion and what course of action to be taken, if any.

RICHARD CHASTONAY.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
PUBLIC HEALTH SERVICE,
FOOD AND DRUG ADMINISTRATION,
Washington, D.C., August 5, 1975.

MEMORANDUM

To: Deputy Director, Bureau of Drugs (HFD-2), through: Associate Director for Compliance (HFD-300).

From: Acting Director, Division of Drug Labeling Compliance (HFD-310).

Subject: Use of certain unapproved drugs for root canal therapy—ACTION.

PROBLEM

To determine the most efficient means of regulating certain root canal preparations which are considered new drugs.

BACKGROUND

The use of root canal filling preparations containing zinc oxide, eugenol, phenylmercuric borate, paraformaldehyde, lead tetroxide, prednisolone, and hydrocortisone and the technique used for their administration has become a very controversial issue among the dentists in this country.

These type preparations are similar in formula to an imported product called "N2", originated by Dr. Angelo Sargenti, a European dentist. The AGSA Distributing Company in New York submitted an NDA for "N2" in June, 1962. Although numerous reviews were made by the FDA of data submitted to this NDA for several years, the drug was never found to be proven safe and effective for the recommended use. The main reason for non-approval of the NDA was that the company never submitted adequate and well-controlled clinical studies to demonstrate that the drug is safe and effective. Most of their data consisted of testimonials, an unacceptable substitute for adequate and well-controlled studies. Consequently, the application was withdrawn by the company in June, 1967.

Since that time, "N2" has had a history of changing composition and/or name depending on the supplying firm and the time the product was purchased.

It has changed formulas over 25 times and has appeared under the names "N2", "R-C", "RC-2A", "RC-2B", "RET-B", and "EOT" with the ingredients essentially remaining the same but their percentages of the total preparation changing.

The Bureau of Drugs dental experts believe the use of paraformaldehyde, lead, hydrocortisone, and/or prednisolone (alone or in combination) in dental products of this type has *not* been demonstrated to be safe and effective, and therefore these type preparation are considered new drugs as defined in 201(p) of the Act.

Both the proponents and opponents of this drug and its use have been advised repeatedly by this office and HFD-160 that these preparations are "new drugs" and may not be marketed in the absence of an NDA (see Tab A-C).

To our knowledge, the product is promoted only by the American Endodontic Society which is an organization formed specifically for this purpose. Their method of promotion consists of conducting seminars at which pre-printed "prescription" blanks are provided the attending dentists. These blanks have the

"N-2" type formulation printed on them and the dentist simply fills in his name, the amount needed, and mails the pre-addressed card to one of several manufacturers and/or distributors of the product whose name appears on the card.

The manufacturer then in turn sends the drug to the requesting dentist. We understand the amount of material involved is usually 10 gms. which is enough to treat 30-40 teeth.

It is our position that distribution of these products in this manner does not constitute dispensing of a drug via a prescription in the traditional sense. In our view, a prescription is a written expression initiated by a licensed practitioner to provide a specific patient with a specific quantity of a drug to be used under his supervision. Thus, exemptions for pharmacy operations do not contemplate a manufacturing order for goods to be delivered to a licensed practitioner for ultimate dispensing by him.

We are aware of several firms which are currently marketing and/or have marketed these preparations in the past. (See list on Tab D). One of these firms, Steri Kem has expressed a desire to file for an NDA but as of yet they have not done so. We have recommendations for regulatory action from New York and Los Angeles Districts which involve three of these firms. We have placed these recommendations in temporary abeyance pending consideration of a class action approach on these preparations.

On January 7, 1975, a conference was held between representatives from HFD-310, HFD-160 and two endodontists at their request. (See Memo of Conference Tab E). They stated that they had copies of studies which demonstrate that N2 has had adverse effects on animals.

We have received this submission and it contained statements from various hospitals, state health departments, and 24 U.S. dental schools that they do not endorse N-2 nor do they teach the method.

It also contained a survey of foreign countries which showed that 23 countries placed this drug in an unacceptable category and 10 countries said it was not as good as conventional endodontics, but had some merit.

In addition the submission contained several papers and abstracts which demonstrated the various cytotoxic, inflammatory, ankylotic and necrotic, effects these pastes could have if the material is extruded into the periapical region. Among these publications is the ADA Council on Dental Therapeutics report on May, 1962 on the hazards of formaldehyde preparations for single treatment procedures in endodontics. The Council concluded that formaldehyde pastes are highly irritating and may present a real hazard if forced through the apex of the root.

The ADA Council on Dental Research has just issued a statement that there still is insufficient evidence to judge these abbreviated endontic methods and recommended carefully designed clinical studies to be initiated as soon as possible to provide this evidence (See Tab F).

In view of the above and in order to effectively achieve compliance with the new drug regulations with regard to these root canal preparations, we are proposing the following options for your consideration.

COURSE OF ACTION

Option 1

Based on the possible health hazard involved should these products come into contact with periapical tissue, initiate regulatory class action on these drugs now, commencing with the issuance of a regulatory letter to the responsible firms officially informing them that their product is a new drug, followed by whatever appropriate action is necessary to bring about discontinuance of marketing and their subsequent removal from the market.

This option would be based on a possible health hazard and would not involve a *Federal Register* announcement giving FDA's position on this class of drugs.

Option 2

Proceed as we did with the topical fluoride preparations and present the entire class of root canal preparations to the Dental Drug Product Advisory Committee for their recommendation and publish a *Federal Register* announcement stating FDA's position regarding the use of these drugs.

ARGUMENTS

Pro.—The alleged adverse reaction complaints we are receiving from the dental profession and the ADA position provide an adequate basis to proceed with

regulatory action based on section 505 of the Act since the products are clearly not generally recognized as safe and effective.

A *Federal Register* statement would not be required prior to introducing regulatory action and consequently this action would not be delayed.

Con.—Initiation of regulatory action without prior notification in the *Federal Register* would be contrary to the present preferred procedure.

Protracted litigation could result as summary judgment would not necessarily be possible in the absence of a regulation, i.e. the contested question would be the safety and efficacy of the drug per se rather than whether the article is in violation of a substantive regulation.

RECOMMENDATION

Even though the N2 preparations do not present an imminent health hazard, there does appear to be a significant safety question involved. Therefore, we are in favor of foregoing the *Federal Register* announcement and proceeding with option 1. Should the alternative option be chosen, however, we would recommend that the review and subsequent *Federal Register* announcement be expeditiously carried out.

RUDOLF APODACA.

DECISION

Option 1

Approved : ----- Disapproved : Carl Leventhal. Date : August 6, 1975.

Option 2

Approved : Carl Leventhal. Disapproved : ----- Date : August 6, 1975.
Prepared by : HFD-313, Chastonay, August 5, 1975, X34206.

RATIONALE

- (1) As agreed above, under *Con.*
- (2) The absence of documented rather than hypothetical hazard.
- (3) We will be in a far better position after expert (Dental Committee) judgment that products are not GRAS and GRAE, which can then form basis for FR statement.
- (4) I think emergent FR statement can form basis for prompt regulatory action—i.e. issuance immediately followed by regulatory letters to firms.

CML.

[Additional documents from FDA files and subcommittee correspondence follow:]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
PUBLIC HEALTH SERVICE,
FOOD AND DRUG ADMINISTRATION,
Washington, D.C., September 23, 1975.

MEMORANDUM

To: Deputy Director, Bureau of Drugs (HFD-2), through: Acting Associate Director for NDE (HFD-100), through: Acting Director HFD-160, (M. Clark, September 23, 1975.)

From: Executive Secretary of the Dental Drug Products Advisory Committee.

Subject: Use of an unapproved drug (N-2) for root canal therapy.

Reference is made to the memo dated August 5, 1975, from HFD-310 and your approval of Option 2 dated August 6, 1975. We request reconsideration of Option 1 for the following reasons:

1. Hazards are documented in published article in the JADA May 1962 (See Flag A).
2. The following experts feel adequate well-controlled clinical studies are needed:
 - (a) The ADA Council on Dental Research (See Flag B).
 - (b) Departments of Endodontics in 24 dental schools in the U.S. (See Flag C).
 - (c) U.S. Government Agencies (See Flag D).
 - (d) Foreign Countries that place the drug in an "unacceptable" category (See Flag E).

3. The Dental Drug Products Advisory Committee has no endodontic experts. The expressed opinion of ADA experts and Department Chairmen in Dental Schools would appear to carry more weight.

May we have the opportunity to discuss this matter with you if you feel that regulatory action should not be taken at this time.

CLARENCE C. GILKES, D.D.S.

Not Approved. Agree to Dr. Leventhal's approach.
M. J. FINKEL (see my memo dated 9/25/75).

MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
PUBLIC HEALTH SERVICE,
FOOD AND DRUG ADMINISTRATION,
Washington, D.C., September 25, 1975.

To: Deputy Director, Bureau of Drugs (HFD-2).
From: Acting Associate Director for New Drug Evaluation (HFD-100).
Subject: N2 root canal formation.

Reference is made to the August 5, 1975 memo to you from Mr. Apodaca and the September 23, 1975 memo to you from Dr. Gilkes, both advocating immediate regulatory action against the N2 formulations. You feel that we should go to our Dental Advisory Committee first. I agree with your approach and have not endorsed Dr. Gilkes memo.

According to the 1962 article by the ADA, root canal formulations containing formaldehyde and paraformaldehyde have come and gone for years in waves of popularity. Some variant of the N2 formulations has been marketed for at least 13 years. Therefore, I think that we can take a few more months to get the backing of our Dental Advisory Committee (supplemented by a guest expert from the ADA and the AAE). Protocol would suggest that this would be a good approach as well as adding the prestige of the opinion of our own Advisory Committee to that of the ADA and AAE in our proposed Federal Register document declaring N2 and related products to be new drugs.

MARION J. FINKEL, M.D.

AMERICAN DENTAL ASSOCIATION,
Chicago, Ill., October 8, 1975.

MR. GILBERT GOLDHAMMER,
Intergovernmental Relations and Human Resources Subcommittee, House of Representatives, Room B-372, Rayburn Office Building, Washington, D.C.

DEAR MR. GOLDHAMMER: The enclosed statement was authorized by the Council on Dental Therapeutics at its meeting on February 10-11, 1975 for informing the dental profession of its position relative to the use of materials in the Sargenti technique of root canal treatment. As I indicated in our telephone conversation, this statement has not been published since the Council has authorized the preparation of a report on the subject which would incorporate these thoughts. However, it is used routinely when inquiries are made concerning the position of the Council on the subject.

You may also be interested in the statement of the Council on Dental Research on the subject of abbreviated endodontics (copy enclosed). This has been submitted to the Editor of *The Journal of the American Dental Association* for publication as a brief report from that Council to the dental profession.

If we can be of any additional help, please feel free to contact us at any time.
Sincerely,

GORDON H. SCHROTENBOER, Ph. D.,
Secretary, Council on Dental Therapeutics.

Enclosure.

Dr. Ciancio moved that the following statement be given to the profession relative to the Sargenti technique and material:

"While it is recognized that the Sargenti method of root canal treatment has enjoyed widespread popularity and some degree of success, the Council on

Dental Therapeutics considers that the points listed below should be brought to the attention of practicing dentists:

(1) After careful consideration the Council on Dental Therapeutics can find no basis for acceptance of RC2B as a dental therapeutic agent.

(2) Application was made more than five years ago for a comparable product to the Food and Drug Administration for approval but no supporting data was ever submitted and the application was withdrawn. Interstate sale of this preparation is illegal.

(3) The Federal Food, Drug and Cosmetic Act does not prevent a licensed practitioner from obtaining RC2B compounded by a local pharmacist and using it in his practice. However, it must be emphasized that in such cases the practitioner assumes full responsibility for any adverse reaction to the patient resulting from such use.

(4) Well documented clinical studies are necessary to establish effectiveness and safety and these have not been provided.

The motion was seconded and unanimously carried. (motion 10/75)

The chairman appointed Dr. Pollock to work with Dr. Heuer on the preparation of a Council report which will incorporate the points enumerated in the above statement. The report will be distributed via the Bulletin to Council members for comment as soon as possible prior to publication in JADA.

ABBREVIATED ENDODONTICS

In response to numerous inquiries and expressions of opinion from the membership, the Council concurred that in many instances, there is need for a more simplified but efficacious endodontic technique. After conferring with the Council on Dental Therapeutics and upon review of the available scientific literature, it was concluded that at the present time, there is insufficient documented evidence to permit the Council to recommend the general use of these techniques by the profession. Certain aspects of these abbreviated procedures were of special concern to the Council. Though some of the methodologies seem reasonable and approximate to some extent, conventional endodontic therapy, the abbreviated procedures are constantly being modified by their various advocates. Thus, the Council has no scientific basis or established information to judge any of these abbreviated procedures as to whether they are superior, equal or inferior to conventional endodontic methods.

The answer can be obtained only through carefully designed, unbiased clinical studies. Council urges that they be initiated just as quickly as possible.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
PUBLIC HEALTH SERVICE,
FOOD AND DRUG ADMINISTRATION,
Rockville, Md., December 2, 1975.

Hon. L. H. FOUNTAIN,
*Chairman, Subcommittee on Intergovernmental Relations and Human Resources,
Committee on Government Operations, House of Representatives, Washington, D.C.*

DEAR MR. FOUNTAIN: Since time did not permit the Bureau of Drugs to present testimony at the October 31, 1975 hearing before the Intergovernmental Relations and Human Resources Subcommittee on the Food and Drug Administration's (FDA) planned utilization of an advisory committee to consider the N-2 type dental root-canal sealers, I would like to take this opportunity to elaborate on some of the points made in our previously submitted statement. Specifically, I wish to provide a more detailed review of FDA's past decisions and planned future action in regulating these drugs.

As our submitted chronology indicates, the N-2 matter was first brought to our attention in February of 1961, via an American Dental Association complaint. As a result of field investigations conducted by FDA subsequent to this complaint, the AGSA Company submitted a new drug application (NDA) in June 1962. The NDA was never approved and was finally withdrawn by the firm in July 1967.

The FDA continued in the ensuing years to receive complaints that similar products were being imported without approved NDA's. These complaints prompted the initiation of several field investigations, which revealed that the N-2 formulations were still being imported. In order to stop this practice, an import alert was issued to all the FDA District offices in August 1971. This

action denied entry to the N-2 formulations because they were regarded as new drugs with no approved NDA's in effect. It also resulted in the initiation of a voluntary recall of an N-2 type product in October 1971. Subsequent to this import ban, the FDA received complaints that the formula was being promoted in this country through a scheme that involves referring dentists to local pharmacies to have the N-2 formula compounded under their prescription.

Although the practices of dentistry and/or pharmacy properly are the responsibility of State and local authorities, our concern caused us to issue a letter to all State drug officials in April 1974, advising them that we regarded the N-2 preparations to be new drugs. The issuance of this letter to all the State agencies represented a major step on the part of the FDA, for such letters are generally reserved for special situations.

More recently the FDA has begun receiving another series of complaints concerning the availability of commercially manufactured N-2 type formulas. We once again conducted extensive investigations concerning the latest promotion of the product. These investigations included a series of inspections, meetings with opponents of the drug, reviews of submitted data, and as the October 31, 1975 hearing testimony brought out, attendance at a lecture series given by the American Association of Endodontics on root-canal therapy.

These investigations persuaded us that even if we successfully seized one version of N-2, a reformulated product could be marketed under the same name, or the same formula by a different manufacturer, and we would have to institute a second, third, or fourth, etc., suit. Furthermore, it became apparent that even if FDA were successful in eliminating from the interstate market all precompounded commercially marketed versions of N-2, a dentist could legitimately prescribe and a pharmacist could compound and dispense the Sargenti formula without violating the Federal Food, Drug, and Cosmetic Act. That act does not authorize the banning of the use of mixtures compounded locally by pharmacists. Such practices are customarily handled under State law. In this connection, as the Subcommittee heard, the California drug officials have informed the pharmacies operating within their jurisdiction that the N-2 formulations are considered new drugs and may not be dispensed even on the prescription of a licensed practitioner. We understand that the State of Maryland is contemplating similar action.

Thus, after weighing all these facts, the past history of these products, and the apparent acceptance of these formulations by a significant portion of the dental community, my staff and I decided we must carefully review the merits of the product before taking additional regulatory action. In particular, we wanted to be certain that a new drug charge would stand scrutiny in a contested case. We also wanted to evaluate whether additional actions (e.g., another letter to State authorities, a public warning, etc.) should be considered.

Accordingly, it seemed entirely appropriate to seek the advice of the dental and scientific community through our advisory committee.

I am pleased to report that on November 12 and 13, 1975, the FDA's Dental Drug Products Advisory Committee convened and heard seven hours of testimony from individuals representing both sides of the controversy.

After deliberation, the committee concluded and so advised . . . that there is insufficient valid scientific evidence to permit a judgment that these preparations are generally recognized as safe and effective. The committee also found insufficient evidence of significant risk from use of the N-2 or RC-2B formulations themselves to warrant recommending their removal from the market. A copy of the committee's statement is attached for your information. While our staff agrees with the committee's scientific judgment that N-2 formulations do not pose a significant hazard, we disagree on legal grounds with the recommendation to permit continued marketing.

The committee's recommendation notwithstanding, the FDA is therefore preparing to initiate regulatory action against those N-2 type formulations commercially marketed in interstate commerce in obvious violation of the new drug provisions of the Act. In addition, we will notify State governments of our actions and also reaffirm our import alert if a new problem develops in this area as domestic marketing is curtailed.

In summary, I believe the record will show that the FDA has adopted an appropriate regulatory posture respecting these products. I assure the Subcommittee that we will continue to do so. I anticipate that State governments and the American Dental Association also will be stimulated to take whatever action they deem appropriate as a result of the recent hearings before your Subcommittee.

and discussions before our advisory committee. I appreciate your concern and interest in this matter.

We would have no objection to this letter being included in the printed record of the hearing.

Sincerely yours,

J. RICHARD CROUT, M.D.,
Director, Bureau of Drugs.

Enclosure:

RECOMMENDATIONS OF DENTAL DRUGS ADVISORY COMMITTEE

The Dental Drug Products Advisory Committee of FDA has examined reprinted articles and documents submitted to it, and has heard seven hours of testimony from interested parties, on the root-canal filling materials "N-2" and "RC-2B".

The Committee believes that these formulations are drugs in the sense of the Federal Food, Drug, and Cosmetic Act. The Committee is aware that regulatory decisions on these compounds have direct impact on endodontic therapy, an important part of dental practice. From the available information, the Committee believes that "N-2" and "RC-2B" are sufficiently similar in formulation to permit joint evaluation. The Committee carefully considered whether or not from the available data, these compounds can be considered as "generally recognized as safe and effective."

Uncontrolled clinical observations suggest that proper preparation and proper filling of root canals with any of the materials currently in use, including "N-2" and "RC-2B", will result in a high percentage of retained asymptomatic teeth. However, the Committee finds that insufficient scientifically valid data are available to permit a judgment that "N-2" and "RC-2B" can be "generally recognized as safe and effective." Moreover, the Committee is concerned that the safety and therapeutic value of some of the ingredients in the materials has not been established.

The FDA Dental Drug Products Advisory Committee recommends that well-controlled studies, including both animal and human trials, to test the safety and efficacy of these materials be undertaken as soon as satisfactory protocols can be developed. While these studies are being performed the Committee believes that from the information presented, the potential risk of these materials, when properly used, is such that they should not be removed from the market at this time.

Since the techniques of mechanical instrumentation associated with endodontic treatment do not fall under the provisions of the Federal Food, Drug, and Cosmetic Act, the Committee makes no judgment in this regard.

AMERICAN ENDODONTIC SOCIETY,
Fullerton, Calif., November 6, 1975.

Hon. L. H. FOUNTAIN,
House of Representatives, Rayburn House Office Building, Room B-372, Washington, D.C.

DEAR SIR: During the hearing of the Intergovernmental Relations and Human Resources Subcommittee on October 31, 1975, regarding the use of advisory committees by the Food and Drug Administration, one of the endodontists testifying, Dr. Stephen Cohen, made a statement implying that the Attorney General of the State of California has banned the root canal filling material under discussion. This statement is not true and we feel it is important that your Subcommittee be made aware of the actual situation.

Enclosed is a memo from Assemblyman John Briggs containing information he obtained from the Attorney General's office. This is only one example of the numerous inaccuracies in the statement by Dr. Cohen, and as time permits and as documentation becomes available we will forward other corrections to you.

As I indicated to you, we are sending under separate cover a copy of the complete Survey of our membership which was prepared last year.

Sincerely,

RAMON WEETS, D.D.S.,
Executive Director.

Enclosure.

ASSEMBLY, CALIFORNIA LEGISLATURE,
Sacramento, Calif., November 5, 1975.

Memo to: Dr. Ramon Werts.
From: Assemblyman John V. Briggs.

On October 21, 1975 Senator Peter Behr requested an Opinion from the Attorney General on the following 2 questions relating to the drug N-2 and N-2 only.

1. Can a pharmacy make it up (N-2) and sell it on a dentist's prescription?
2. Can a dentist use it (N-2) at all since it doesn't have FDA approval?

The Opinion is an informal opinion giving advice only and by itself will not have the force of law.

JOHN V. BRIGGS,
Assemblyman, Sixty-ninth District.

DUDLEY H. GLICK, D.D.S. INC.,
Beverly Hills, Calif., November 26, 1975.

Mr. L. H. FOUNTAIN,
Chairman, Intergovernmental Relations and Human Resources Subcommittee,
Rayburn House Office Building, Washington, D.C.

DEAR CHAIRMAN FOUNTAIN: I am enclosing a letter which I sent to Dr. Frank Shuler, President-Elect of the American Dental Association. As you may recall, Dr. Werts mentioned his name to impress the committee with the prestigious type members they had in the AES.

You, quite adroitly, recognized the ploy and realizing a member does not necessarily have to be a user, asked if he in fact did utilize RC2B. Dr. Werts said he could not say but the fact he has been a member for three years would be an indication.

May I offer in evidence this letter that Dr. Shuler does not nor ever has used the material. I am also returning the copy of the transcript.

Thank you and with all best wishes,

Sincerely,

DUDLEY H. GLICK, DDS.

Enclosures.

DUDLEY H. GLICK, D.D.S. INC.,
Beverly Hills, Calif., November 14, 1975.

Dr. FRANK SHULER,
Clinton, Wis.

DEAR DR. SHULER: It was pleasant chatting with you this past Tuesday before I left for Washington, D.C. and the Advisory Committee Hearing.

Thanks for granting me permission to quote that although a member of the American Endodontic Society, which broadens your educational base, you do not use nor have you ever used N2 or RC2B. Also that you do an occasional single rooted tooth and use an accepted American Association of Endodontists standard technique.

Enclosed are the pertinent pages from the House Committee Transcripts, where Dr. Werts mentions your name. The draft copy I got is very light and so the xerox copy of the copy is poor but legible.

Incidentally, I gave your regards to Bob and he was happy to know you were "watching the store" in Chicago.

Congratulations on your election to President-elect of the American Dental Association. All best wishes.

Sincerely,

DUDLEY H. GLICK, D.D.S.

Enclosure:

Mr. FOUNTAIN. The subcommittee will stand adjourned, to reconvene subject to the call of the Chair.

[Whereupon, at 1:05 p.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

APPENDIX

CRITIQUE OF DR. WERTS STATEMENT AT OCTOBER 31, 1975 HEARING ON N2

(By Howard Martin, D.M.D., F.A.C.D.)

(See pp. 51-71)

The A.E.S. is not recognized by the Council on Dental Education. The American Board of Endodontics is the recognized certifying body and is sponsored by the American Association of Endodontists, which therefore has a relationship with the A.D.A.

The supposition of numbers who use the Sargenti material and method is assumption and specious.

Dental Survey survey has never been reported in the literature. The Dental Survey is a journal which has no subscription dues but is supplied to all dentists free. It is not considered a journal of research but falls into a technique throw-away type of magazine.

The estimate of 300 million teeth extracted is completely erroneous. At the Nov. 12, 1975 Dental Advisory Board hearing, Dr. Werts admitted it was second hand information that could not be substantiated. The correct figure according to A.D.A. estimates is 36 million.

The A.A.E. survey on root canal fees ranges from one canal of \$100 to three canals at \$250.

It is basically different due to lack of debridement, irrigation, and dimensional obturation with inert or innocuous materials

A scientific problem arises due to the usage of a severe and potentially harmful drug in the root canal which often comes in contact with vital vascular tissue to cause severe reactions. These reactions are not necessary if less deleterious materials, as advocated in conventional therapy, are utilized.

The scientific documentation of the N2 has been shown to be either invalid or misleading. The bulk of documentation does not advocate the paraformaldehyde pastes which include lead, steroids and mercurials.

The A.D.A. councils evaluate the various scientific results of drugs and the preponderance has been negative regarding N2.

Slough of the palate has never been documented with conventional materials.

The daily permissible intake of lead is reached by filling a canine tooth with N2 and calculating one half to one percent resorption, which is more than likely, of the tip of the material at the apex. It would be higher if extrusion occurs.

RC2B has therapeutic claims for itself as an antiseptic agent and sterilizing agent. The silver point or gutta percha has no therapeutic claims but is an inert obturator. There is no doubt that N2 is a drug.

The major ingredient is Zinc Oxide in both, but N2 has 11% lead, steroids 1.5%, paraformaldehyde 6.5% plus mercurials and titanium.

The two major producers of gutta percha attest to no lead in their product.

Most endodontic drugs have had substantial scientific information to show their safety and effectiveness.

The main ingredient in conventional endodontic sealers is zinc oxide. There is no paraformaldehyde, steroids or lead and mercurials.

If there is no product called RC2B, how does one order RC2B from the pharmacies? It is the code name for the material.

Group D is out since the A.D.A. does not list unacceptable materials.

A.E.S. is sponsoring RC2B since it is essential to the technique. Without it, there would be no courses to give about the technique.

Dr. Shuler, referred to here does not advocate or use the technique. This is known generally and personally by me.

Formocresol is used only on deciduous teeth; teeth that are going to exfoliate in a short time period.

The silver filling is an amalgam and metallurgically inert due to its eutectic point amalgamation. The mercury is bound and unreleased and altered into a fixed state.

The A.A.E. provides courses all over the country as do dental schools and local dental societies.

Werts admits modification of the drug since 1962; therefore it is a new drug now as it was in 1962. Sargenti admits to 25 modifications over the last few years as stated in the ADA news of Oct. 1975.

AMERICAN ENDODONTIC SOCIETY



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NEWSLETTER

NUMBER 16

FALL, 1975

KNOW THEM BY THEIR OWN WORDS

Excerpts from two official cassettes recorded by assignment of the American Association of Endodontists at their annual session in New Orleans April 23-27, 1975, and available for purchase at \$5.95 each, as advertised in the *Journal of Endodontics*. These are the statements of professional men—those who limit their practices to endodontics. The underlines are those of the NEWSLETTER editors, to emphasize a few especially significant points.

(Dr. Dudley Glick) "Many of you are here to listen to some of the ammunition that we have to help you combat this (the Sargenti technique) when the GP comes to you, and very often very antagonistically and stridently he will grab you by the lapels and say, 'What do you think about N2?' And watch out, because what you say might put him on the defensive and get him so angry, because maybe he just used N2. He comes up and says, 'you know, I use N2 all the time and I have nothing but 100 percent success.' Fine, you know how to handle him. Don't tell him it is a bunch of crap, because it's a personal affront to this gentleman, right then and there. He used it and now you are telling him that it is no good; that makes him a poor dentist. In fact, we will talk about, later on, comparing poor dentistry to some of these men who use the Sargenti technique. He doesn't want to hear about it. But I think Herb (Schilder) will talk about how you handle some of these men who come up to you stridently and want to put you on the defensive. Some of the things that we will talk about might give you an insight into how to handle it because as educators, when we talk, there, and most of you being educators, clinicians, and GPs have to have an answer because they look to you. Also, I wonder how many of you have used N2. If I took a poll in here and if everybody was going to be hon-

est, except Frank Weine and myself, I wonder how many have used it and how many of you—thank you, colleagues—but the same thing—are we condemning this based on hearsay, and if we are we have to be prepared to give the answer on why we are condemning it on hearsay."

(Glick) "There are continually undulating waves of this N2 going on throughout the country and it is moving up and down, up and down, depending on where you are in the country. It depends on how it affects us. In our area, out in Orange County, we get nothing but responses from men who are worried and concerned that this is going to engulf them and that they are going to be left with nothing except a bunch of N2 men working around there."

(Glick) "I know that whenever we hear about lawsuits, somebody wants to graft on that and I have been approached maybe a dozen times with, 'Hey, how about those two lawsuits out in California?' 'Which two are you talking about?' 'Well, you know, the one where there was an embolism as a result of N2 being used, and the other one about the slough of the palate.' Sounds good, sounds like great ammunition that you can use.

"First of all, let's hear straight. Please do not go out and tell everybody, 'Hey, they've got a couple of lawsuits out there that really are going to stop N2 cold.' Don't you believe it. Until the thing is adjudicated and they find out exactly where we stand, don't go out and perpetuate this myth. The thing is that it is possible for you to fill a canal and create pressure there and cause an embolism using a conventional technique. Yes—it is possible to have a slough of the palate or other tissue. Yes—because we have doc-

(Continued on Page 2)

Where There's Smoke, There's Fire

From an article by Herbert Schilder in the *Journal of Endodontics*, January, 1975: "There is every indication that the current imbalance on the demand side will be overcorrected, so that in the reasonably near future there may be an overabundance of endodontists, endodontic auxiliaries, and general dentists. As al-

ways in such phenomena, those most specially trained will be the ones most seriously dislocated . . . At the current rate, the number of endodontists will double in three years." (Dr. Schilder is Professor and Chairman, Dept. of Endodontics, Boston University School of Graduate Dentistry. Also in private practice.)

umentation; it has occurred, and the attorney is going to this and say, 'Look, you can't blame N2 alone, when the same thing has occurred using the so-called conventional technique.' And I'm drawing from my knowledge and everything that has been focused into me over these past four years. I have a garage full of memorabilia. I would like to take and put a match to it, because I say that it is a garage full of emotion, myths, very few facts. We must have facts. I would caution you against emotional outbursts. Here I usually get very emotionally involved. I'm starting out very quietly now. By the end of the meeting I will be a raving maniac up here."

(Glick) "Interestingly enough also, if any of you are interested, you know we had an AAE editorial that we spent a year and a half putting together with our ad hoc committee and members of the committee worked assiduously on this with the idea that it was supposed to be placed in the Academy of General Dentistry Journal. They reneged, they were evasive, because they were afraid. After all, how do you pit the good guys against the good guys? And we are all good guys. Their members are members of the ADA, members of the AGD. God forbid, there may even be some among us. Look to your neighbors—but the thing is we are all good dues-paying members, ethical, and how do you blow the whistle on the other guy? And that's the problem that our carriers have, our legal department when you call him for expert testimony. How to answer that?"

Not Satisfied With "Establishment" Fillings

(Glick) "If I can say right up front, I'm not completely satisfied with all of our so-called 'establishment' fillings and other so-called conventional therapies I see, or you see, I'm certain. But you and I ask where we can do better. I'm not convinced that the N2s do that. They want to accept what they have. As I told you, pain is their criterion and that's fine. We are looking deeper; we want to find out why we have a failure occasionally and how we can re-treat that, do it better—but not so with them."

(Glick) "We and Sargenti have a mutual goal—I will admit to that. We are both in the business of trying to save teeth. If we are in the business of trying to save the teeth, it is commendable. But he is in there trying and he says, 'Well, I can't give you a Herb Schilder type treatment or a Dudley Glick, or whoever, type of treatment, but I'm giving these people a compromise treatment and you know the first time I'm able to—We will get to it after and we will air it in the discussion. But the thing is that with these men, they are happy with a compromise or inadequate technique. Many of these, as Frank said, use this type of technique in their practice and if they do, you are not going to win them over. Forget it! You know you are dealing with that type of man right up front. Say, 'Yes—if you like N2, that is for you, good. You can probably do better, but stay with N2,' and that is it. And we will have to ride it out. We will have to wait to see all of those failures coming. After all, our technique did not evolve overnight. We had a lot of failures and we learned from our failures."

Make More Money—All That Dentists Want To Hear

(Glick) "To me it is incredible, absolutely incredible, how many dentists we do see, though, that attend these courses and do clasp this sloppy technique to their bosoms, and because they are told that they are going to get a quicker, easier technique, ergo, make more money. That is all you have to say—make more money. You want to put on a post-graduate course that really brings them in, you talk about practice management—you talk about money. And when you get them all in the room you say, 'Oh, that was only a ruse. I am going to talk to you about conventional endo,' and you are going to lose the whole group. I found a long time ago, and I will tell you one of my little tricks to keep an audience interested: 'At the end of my lecture, I'm going to talk about charges—fees in Beverly Hills, how much I charge in Beverly Hills.' Oh, boy, so they sit there waiting to hear how much Dudley charges in Beverly Hills. I did this up in San Francisco. I forgot that I had said that and I was ready to leave, and here the audience was packed—they were sitting in the aisle. And this one fellow said, 'Dr. Glick, you still haven't talked about fees yet.' I wondered why all of them had stayed to the bitter end. You talk about money and every time you will have them there, so the thing is that if you tell them that they can make more money, and that is what the N2ers do, they are going to be there. They are going to go to those conclaves that have 300, 400 to 500 attending—where when I give a course I always have 20 to 30 out there and I have always been happy."

(Glick) "Sargenti says that the establishment plots to keep all the business to themselves and so purposely knocks N2. At meetings like this, we are here to knock N2 because we want to keep all this endodontic business in this United States to ourselves! You are part of a plot, gentlemen, to keep all that money! If this were so, then I ask you, as I threw out earlier, why would the specialists not use N2, do endodontics quicker, ergo, make more money? Of course I don't have to worry about them. My wife is independently wealthy. She wants me to sit back and take it easy. She says, 'Why do you get so wrapped up so much in this N2 and get so excited for?' She says, 'Stop—come away to Europe with me; live in the south of France. We will buy a villa, use N2 and get richer.' But aside from that we complement each other. It stands to reason that if we were the money-grubbers that Sargenti says we are, we would have abandoned our principles, our standards, and turned to the use of N2 long ago. The difference is that we have principles, we have these standards, and we have the scruples that will not permit us to do this, no matter what the monetary rewards."

Laugh at "Angelo Sargenti Dies"

(Herbert Schilder) "I have a newspaper article to announce to you that says here—and it is from the Auburn, New York Press: 'Angelo Sargenti dies. Local grocer for 23 years.' If anyone cares to read that, I have it here." (Laughter)

... "we are not as good as we thought we were . . ."

(Schilder) Since we do have this audience here, I might tell you some of my conclusions that don't sound too good for us. I may tell you some conclusions when we are through that don't sound too good for us. (sic) I will suggest some of them. I think we have an obligation to get better. I said before and I will repeat again, Angelo Sargenti may be doing us a service. He may be teaching us that we are not as good as we thought we were. If we were so damn good as teachers as we thought we were, can it be true that 10,000 well-educated American dentists take his course and use his techniques? And I know full well what we tell each other when we want to make ourselves happy—that you take the course and I take the course and this adds to his list, and then people take it out of curiosity and they don't use the material. Let's not suffer and keep telling ourselves things that make us happy, because the problem isn't in this room. There must be something, why people are going out and doing this work, and I think we may not have been so successful in our teaching. Our results may be successful. We may have developed a great technology, but we are going to stop hemming and hawing and recognize that somebody is nibbling at our heels. And whenever we are strong, they don't have a chance. And while we have to do research to underpin our activity, the people we are dealing with are only interested in clinical results. You will never convince them—never on the basis of scientific investigation except in a negligible way. You will never overcome this except on the basis of clinical results."

(Schilder) You had better believe that some N2-treated cases are successful. You better believe it. If they weren't, they would be lynching Angelo the next time he arrived in New York, and they are not lynching Angelo. Some endodontically treated teeth with N2 are successful. So as Dudley suggested, never attack the material nor the method to a man who is currently using it. It may be working for him. He may have been having successes with it this month, even if only for a short time, and you and your arguments will seem more partisan and idiotic to him. If Jack Horack, who is not here, doesn't mind, I don't know why he should mind—the President of the State Board of Dental Examiners of Massachusetts is using N2. The chairman of the State Board of Examiners, who has taken endodontic courses and used to do conventional endodontics, and now he is using N2. He will come back, but at this particular moment, when I try to discuss it with him he says, 'You sound crazy. Why should I do differently if I am getting along fine now?' You will instantaneously lose your credibility and all useful interchange will cease. You may satisfy yourself, but never the other person."

(Schilder) "The New England Foundation for Continuing Dental Education, of which I am a director, invited the N2 group to come to New England (this Foundation is) representing the six state dental societies and four schools. I argued; I fought; I hammered; I finally pleaded 'out of respect for me' and sent the dean of the school in. I got letters from all

the assistant deans for continuing education and all the chairmen for the departments of endodontics—and they said, 'Herb, we will apologize next month; this time we are going to fill the house.' And that is what they did, you know, and I said they were unreasonable. Once it was over I sat back and had a beer, and you know, they were reasonable people. They don't understand when you tell this thing. They are going to understand when they have trouble."

(Schilder) "And they are not so bad, these general dentists—there are ways to reach them. Point out the sloppiness of the technique; work on the technique. The technique is so illogical to any decent dentist that that is your area of working. They are not interested in the pharmacology. They don't even understand the pharmacology of the good things; they are not interested in that. They are not interested. How many people here use Ilosone? How many people use Ilosone? I see the hands come up. Did you read the report from the FDA last month? Can't use it. You shouldn't use it any more. It was so sensitive that people were dying of intractable colitis even after the medication was taken away. Cleocin—excuse me, Cleomycin—pardon me (he breaks off the sentence). We are the good guys and let that be an example to you. Okay, the sloppiness of the technique. Let that be an example of the mistake that just occurred—here you have it. The sloppiness of the technique is far more effective with the general dentist than the effects upon—the material. Attend an AES course. You cannot defend conventional endodontics to students and generalists if they know more about the Sargenti technique than you do."

No Substantial Proof or Disproof

(Schilder) "Now, up until this time, in spite of all the scientific evidence, there has been no substantial, statistically significant reports either proving or disproving the success/failure ration in humans or the effect of the material in human tissues. Most of our material up to this time has been based upon the extravagance of their claims on the effectiveness of their techniques, and on anecdotal data from isolated case failures. I feel very confident that in the very near future such material will be available so that we may at least respond authoritatively to the irksome revival of this ancient procedure. But until that time, when human material statistically analysed is available, until that time I submit to you that Dr. Sargenti is not only clever and partisan, as you doubtlessly suspect, that he is also intelligent and, in my judgment, reasonable. He attends many endodontic lectures and courses given by conventional endodontists both in this country and abroad."

(Schilder) "His (Dr. Sargenti's) wife is a pedodontist, and a very charming woman and a most attractive woman; in fact, about 25 years younger than Angelo. They live on different sides of the country. He lives on the Italian border and she lives on the German border and they meet on weekends. It must be a wonderful thing." (laughter).

Hit Biggest Majority of Profession Through Carriers

(Dudley Glick) "Now if I can just go one step further, Peter, on this compromise issue, I think the place that we are going to be able to hit the biggest majority of the profession is through the carriers. Now I am now in the works through the United States administrators—oh, they are the U. S. administrators—no, they are not government, but what they do, they sort of are the clearing house for a group of carriers and they are actually a business, yes. They also do consulting and they check on the quality control of dentistry. Now, they also pay X amount for each procedure in dentistry. Finally we have been able to get the U. S. administrators to say that when a man submits that he is doing an N2 procedure, he will get only one-third of what the regular fee is for regular or conventional endodontics. Now if he does not submit that and they find out it was N2 from whatever reason, he is then fraudulent. So when they say, well, they won't show it or they won't say it, that is up to the individual. You can't police everyone. But I think we have to work through the carriers now, inasmuch as we are starting to get so much of this in the works. I also have Occidental and Connecticut General thinking along this line . . . And I think this is where we are hitting them. We have men working on this . . . so I think we are making headway . . ."

(Dentist in audience identified as "Hal") "So if you are going to deal with this problem, I don't believe that doing better endodontics, as Herb suggested, just within yourselves—doing better and better quality endodontics is going to resolve this problem. You have got to do what Kaare (Langeland) says and go out and fight it in some fashion. Now I don't care how you fight it but I think you have to be active about that. I am a little bit concerned about making deals about the amount of money, one-third less for the N2 technique having come from the government. If they are short of funds, the government will so easily change its course."

COMMENTARY ON "AT THE ROOT OF THE TROUBLE" NEWSWEEK, OCTOBER 6, 1975

Certain statements in the article appearing in Newsweek magazine have the potential for misinterpretation and could lead to certain misconceptions about the "Sargenti Method of Endodontics." Following are clarifications of specific items.

-1-

The statement that root canal therapy is a "job for a specialist" will be refuted by virtually every general practitioner in this country. Root canal therapy is simply another part of dentistry which every dentist is taught in dental school and is a phase of dentistry which should be available to every patient regardless of whether the dentist is a general practitioner or one who limits his practice. It does not require "years of training and experience" to perform even complicated root canal therapy. It only requires an interest and desire on the part of the dentist to be able to treat all situations.

-2-

The Sargenti Method is not "a new kind of root canal therapy". It has been used in Europe and virtually every country of the world for approximately twenty-five years. It is new to this country in the sense that it has only been introduced here on an organized basis during the last five years through the efforts of the American Endodontic Society. It is an established proven technique and millions of teeth have been saved throughout the world by this usually simpler, faster and often more inexpensive procedure.

-3-

In all methods the dentist drills a hole in the crown of the tooth and removes the pulp with various small instruments. The difference in the Sargenti Method is that these same small instruments are held by a small handpiece rather than by the fingers, providing more access, greater visual ability, and more rapid preparation.

-4-

In the Sargenti Method the standard miniature hand-held instruments as well as the Giromatic and other motorized instruments can be used. The Sargenti Method does not require a dentist to use motorized instruments. The same procedure can indeed be accomplished by the identical approach that so-called conventional endodontics suggests. Our approach is that the mechanical instrumentation of the canal does truly simplify the task of pulp removal.

-5-

Of the three materials mentioned, only one, "N2", is a trade name. The RC2A and RC2B formulas are simply a list of ingredients which can be prepared by any pharmacy.


-6-

The statement by the American Association of Endodontists that "root canal therapy is simply too complex to be learned in a one-day seminar" is nonsense. Every dentist in practice today has been instructed in endodontic treatment in dental school and the dental practice act of every state permits him to perform this therapy. The one-day seminar simply presents the basic information of a slightly different approach to what is already known and understood by every dentist.

-7-

Ample "valid scientific studies" have been completed in universities throughout Europe and by independent qualified researchers in the United States. The opponents of this technique are prone to suggesting that European research is not valid, and thus have

(Continued on Page 5)

	<p>You may obtain the new AES patient education flier, "Saving Teeth," at \$3.00 per hundred; in Spanish—\$7.50 per hundred. (Increased cost because of limited printing and special type).</p> <p>Send your check with your order to:</p> <p>American Endodontic Society 1400 No. Harbor Blvd., Suite 220 Fullerton, CA 92635</p>
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overlooked the considerable scientific information that has been available for many years.

-8-

Lead and mercury compounds are widely used in medicine and dentistry. Mercury, for example, is one of the principal ingredients in every silver amalgam filling placed in a tooth. Recent studies have shown that the mercury in a silver amalgam filling has a significant "leakage factor" and can even be found in the soft tissue surrounding the tooth many years after the filling has been placed. Mercury compounds are widely used in over-the-counter preparations such as Preparation H, and vaginal creams and jellies. Any substance can be a toxic hazard in the improper dosage. The amount of these compounds included in the root canal formula is of such minute quantity that they cannot possibly pose a hazard, even assuming that the toxic hazard is cumulative in effect.

-9-

Any dentist will readily attest to the fact that he has seen patients with injuries to bone and oral tissues following any root canal treatment. There have been without question many more malpractice suits regarding conventional endodontics than there have been with the Sargenti treatment. The malpractice case specifically referred to would reflect a gross abuse of both the technique and the material. An example of the misuse of a commonly used drug that can cause sloughing of tissue, bone denuding, and osteomyelitis when placed on the gums is the common aspirin. The improper use of this drug should be condemned. We all know the benefits of the proper use of this drug. Any drug or material used improperly can be debilitating. The American Endodontic Society has documented the treatment of more than 2,000,000 teeth with this technique during the past few years with a percentage of success exceeding 95%, which is higher than any reported studies with conventional endodontics.

-10-

It is interesting to note that a spectrographic analysis of gutta percha used by the "more orthodox endodontists" shows that it also contains lead, as well as cadmium, which is a poisonous material.

-11-

In California, health officials have declared several suppliers of the paste to be "manufacturers" rather than providing it on a prescription basis. It is perfectly legal for a dentist to write a prescription for RC2B and have it compounded by his pharmacy in the State of California.

-12-

The statement that the California Dental Association has advised all its members against its use is sim-

ply not true. The California Dental Association recently sent a letter to its members advising them of certain Food and Drug regulations relating to the manufacturing of drugs. This in no way represents a policy or position of the California Dental Association. None of the materials used in endodontic therapy, including gutta percha and any of the cements, pastes or medicaments, has ever been approved by either the State or Federal Food and Drug Administration. The selection of the Sargenti formulation is discriminatory. Since there are only approximately 600 "endodontists" in the entire country, it is obvious that they cannot perform all of the root canal therapy that needs to be done. Every general practitioner must have available in his practice a technique which enables him to save teeth in as short a period of time as possible so that the fee for this treatment can be as reasonable as possible.

The American Endodontic Society does not contend that any other technique is necessarily inferior. We only contend that the so-called Sargenti Method of endodontics is another way of performing usual and customary treatment for our patients which oftentimes enables the dentist to save an otherwise hopelessly involved tooth from extraction.

—Ramon Werts, D.D.S.
Executive Director

AES ASKS FOR ADA ACTION ON STATEMENTS BY DRS. GLICK AND LUKS

October 8, 1975

Mr. W. Elliott Dunn, Secretary
Council on Judicial Procedures, Constitution and Bylaws
The American Dental Association
211 East Chicago Avenue
Chicago, IL 60611

Dear Mr. Dunn:

On behalf of the American Endodontic Society and also the thousands of its individual members, who are members of the American Dental Association, we are asking the ADA to take immediate and formal action against Dr. Dudley Glick of California and Dr. Samuel Luks of New York, for their statements quoted in the October 6, 1975 Newsweek magazine. A copy of the article is enclosed.

The words of Dr. Glick, who allowed an article to quote him that puts thoughts in the public's minds and initiates the "Premeditated Malpractice" that we wrote you about in our April 4, 1975 correspondence, are strictly contrary to the Ethics of the American Dental Association.

We have on tape the official transcript of Dr. Glick and others at the meeting of the American Association of Endodontists in New Orleans this year, where these insinuations of malpractice were brought up.

The innuendos and insinuations of damage of a patient's mouth and the simultaneous mention of the Sargenti Method, are intentionally meant to associate two different problems into one. The reader is intentionally deceived.

Dr. Luks also deceives the public with his statement that pain is associated only with the Sargenti Method. He neglected to inform the reader that most patients needing endodontic treatment are in pain and conventional root canal therapy often is associated with pain before and after treatment. One of the most important features of our Simplified Method is the immediate relief of pain.

We will expect a reply from you immediately on what action the ADA intends to take. We will also make available to you the transcripts of the AAE meeting in New Orleans, so that you can also see how a planned program to intimidate the nation's insurance carriers was outlined at this meeting.

Sincerely yours,
Alvin H. Arzt, D.D.S.
Secretary-Treasurer

cc. Dr. C. Gordon Watson

Use other side

PRESIDENT VENERI URGES YOUR ATTENDANCE AT THE FOLLOWING REGIONAL MEETINGS:

The Regional Meetings of AES this past year have proved so helpful and have been so well attended that your officers have scheduled similar forums immediately preceding or following the AES-endorsed Seminars on Simplified Endodontics beginning this fall. These sessions are devoted to a brief review of the Sargenti Method and a question-and-answer, problem-solving, open discussion to give our members an opportunity to share their knowledge and experiences. Members are invited to bring X-rays and case histories for discussion. There is no registration fee, but reservations are necessary because of space limitations. Attendance is limited to members only, with admission by membership card.

Chicago - Sunday, October 26, 1975 - 9:00 - 11:00 A.M. - Towers Hotel

The above meeting will be conducted by Drs. Ramon Werts, James Garry, Alvin Arzt, and A. Joseph Venneri.

Washington, D.C. - Sunday, November 2, 1975 - 9:00 - 11:00 A.M. - Twin Bridges Marriott

Cleveland - Tuesday, November 4, 1975 - 8:00 - 10:00 P.M. - Marriott Inn

Birmingham - Sunday, November 23, 1975 - 9:00 - 11:00 A.M. - Birmingham Hyatt House

New York City - Sunday, November 30, 1975 - 9:00 - 11:00 A.M. - Statler Hilton

Toronto - Sunday, December 7, 1975 - 9:00 - 11:00 A.M. - Royal York Hotel

These sessions will be conducted by Drs. Alvin Arzt and A. Joseph Venneri. Reservations should be made with AES East—2 Learning Lane, Levittown, PA. 19054.

AES Annual Business Meeting - Towers Hotel, Chicago - Friday, October 24, 1975 - 3:00 P.M.

FILLING THE CANAL

The final filling of the canal is the last step in the completion of the root canal therapy. This procedure, in combination with the complete debridement, enlargement and shaping (Washington Monument shape), will consistently produce the successful results that are obtained with the Simplified Root Canal Method.

During the mechanical reaming stage, we recommend that the reamer always be coated with TCM. For the final filling, we recommend a new second mix of RC-2B (leaving the Terra-Cortril out). This mix will be more radiopaque on the final X-ray.

A lentulo spiral is selected that will take you to the bottom of your canal preparation (physiological apex in non-vital teeth and apical third in vital teeth). The spiral is inserted and moved up and down without the engine running, to coat the canal. Then the engine is started and with an up and down movement, the spiral is withdrawn from the canal. Be sure the engine is running faster than the speed used for the reaming stage, as the cement must fly off the spiral. A good test of the proper speed is to hold your cement coated spiral near a towel, and turn up the engine speed and note what speed is necessary for the cement to fly off.

In sharp curved canals, such as posterior teeth, the technique will vary slightly. Select a spiral that will penetrate as far as possible, but often this is only to the beginning of the curve. Fill this portion of the canal as described above, and then select a small reamer that had previously prepared the canal to the physiological apex and now fill the complete depth of the canal with this reamer running in reverse. This will pull the cement from the coronal portion down

deeper into the tooth, apically.

Take a final X-ray and develop it before closing the coronal opening. If the radiograph does not appear dark enough, the filling steps can be repeated. Another tip for darker X-rays is to make the cement THINNER than you have been previously. This will permit the cement to fly off the spiral easily and fill the canal. Make sure the mix is not too loose or runny. Many dentists think that they can put more cement into the canal by making thicker mixes, but the opposite is true.

By following these steps, the canal can be filled and completed with utmost ease.

A STATEMENT BY OUR PRESIDENT

Never in my experience have we had such blatant disregard of the capabilities of the general dentist by a group of his colleagues. The obvious result of the use of the Sargenti Method of Simplified Endodontics by vast numbers of dentists has been the exercise of deep emotional and fear-inspiring tactics by a specific group of limited practitioners using every possible effort to discredit the general dentist and his Society, AES.

Many of our members are inquiring why there is opposition to the Sargenti Method, a technique that has given them ample clinical success. The excerpts in these pages will give a vivid insight into the unprofessional and unscientific manner in which our fate is debated and allegedly decided upon. **KNOW THEM BY THEIR WORDS.**

A. Joseph Venneri, D.D.S.