

Dr. Foster

M E M O R A N D U M

*File
Talc - Ovarian
Cancer
Issue*

TO: Yale Gressel
FROM: W. R. Troy
DATE: August 13, 1982
SUBJECT: Review of "Ovarian Cancer and Talc" Publication

A publication in the July 15 issue of the journal Cancer, entitled "Ovarian Cancer and Talc, A Case-Control Study", has created a stir in the lay press which may result in renewed questions regarding the safety of cosmetic talc. The significance of this article is emphasized by the fact that the principal author is associated with the Department of Epidemiology of the Harvard School of Public Health, a very prestigious institution. In the whole, the article is well done and makes a convincing case for an association between the use by women of talcum powder in the perineal area and an increased incidence of ovarian cancer in these women. In summary, it is reported that 42.8% of the women surveyed (92 out of 215 subjects) who had been diagnosed as positive for ovarian cancer had reported using talc regularly in the perineal area. Only 28.4% of the controls - women who had not had ovarian cancer - reported similar use of talc.

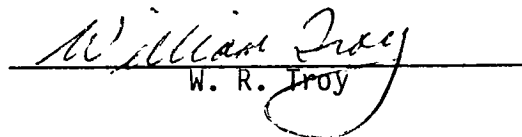
Johnson&Johnson has already announced that they plan to mount a significant research program to investigate the possible link between talc and ovarian cancer, and CTFA plans to have the publication in question reviewed by a consultant epidemiologist, Dr. Ian Higgans. One significant point regarding this study which must be borne in mind is that, prior to 1976, cosmetic talcs used by the industry varied widely in their asbestiform content. Since ovarian cancer is a disease which is characteristically long in developing, it is possible that effects being seen now - if they are real - are related to past contamination of talc with asbestos, rather than to talc itself.

In addition to this consideration, I have three specific comments regarding this paper:

1. The authors state that they originally identified 297 eligible "cases" (of possible ovarian cancer) using hospital pathology records. Of these 297, physicians denied permission to contact 13 patients, 14 patients declined to participate, 14 patients had died or moved, and 18 other cases were excluded because review of the tissue sections revealed nonovarian primary cancers. These are the only exclusions that the authors mention and, when subtracted from 297, a figure of 238 (not 215 as the authors state) results. If 238 is in fact the correct number of ovarian cancer cases examined, then the incidence of patients who regularly used talc in the perineal area and were found to have ovarian cancer would be 38.7%, not 42.8% as the authors state.

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2. Referring to the attached chart, and specifically to the section regarding use of a diaphragm, it can be seen that the incidence of exposure for "cases" and controls who used a diaphragm for more than five years, and regularly dusted the diaphragm with talc, are practically identical. Again, since ovarian cancer does not develop in a short time, the less-than-5-year diaphragm users would not make a valid comparison group.
3. Comparison of "cases" where perineal exposure to talc was as a dusting powder only (20.0%), to "cases" where exposure was via dusting the perineal area plus application to sanitary napkin (14.9%), reveals a reverse dose-response relationship. That is, it would be expected that if talc were truly linked to the production of ovarian cancer, the heavier exposure experienced by the dusting plus napkin users would result in a greater incidence of cancer than perineal dusting only. This is clearly not the case according to the data presented.


W. R. Troy

WRT/vcd
cc: G. V. Foster
D. M. Martin
J. J. Teal

Attachment

Review of "Ovarian Cancer and Talc" Publication

	Cases		Controls	
	Total	No. (%) with exposure	Total	No. (%) with exposure
Pelvic Surgery	215	78 (36.3)	215	75 (34.9)
Pelvic Surgery prior to 1950	215	51 (23.7)	215	48 (22.3)
Use of condoms	169	19 (11.2)	191	30 (15.7)
Use of diaphragm	169	37 (21.9)	191	35 (18.3)
(Used < 5 years	13	6 (46.2)	21	8 (38.1)
(Used > 5 years	27	16 (59.3)	19	11 (57.9)
No perineal talc exposure	215	123 (57.2)	215	154 (71.6)
Any perineal talc exposure	215	92 (42.8)	215	61 (28.4)
(Dusting powder only	215	43 (20.0)	215	34 (15.8)
(Napkins only	215	17 (7.9)	215	14 (6.5)
(Dusting plus napkins	215	32 (14.9)	215	13 (6.0)

Ovarian Cancer and Talc

A Case-Control Study

DANIEL W. CRAMER, MD,*†‡ WILLIAM R. WELCH, MD,§ ROBERT E. SCULLY, MD,¶
AND CAROL A. WOJCIECHOWSKI, RN‡

Opportunities for genital exposure to talc were assessed in 215 white females with epithelial ovarian cancers and in 215 control women from the general population matched by age, race, and residence. Ninety-two (42.8%) cases regularly used talc either as a dusting powder on the perineum or on sanitary napkins compared with 61 (28.4%) controls. Adjusted for parity and menopausal status, this difference yielded a relative risk of 1.92 ($P < 0.003$) for ovarian cancer associated with these practices. Women who had regularly engaged in both practices had an adjusted relative risk of 3.28 ($P < 0.001$) compared to women with neither exposure. This provides some support for an association between talc and ovarian cancer hypothesized because of the similarity of ovarian cancer to mesotheliomas and the chemical relation of talc to asbestos, a known cause of mesotheliomas. The authors also investigated opportunities for potential talc exposure from rubber products such as condoms or diaphragms or from pelvic surgery. No significant differences were noted between cases and controls in these exposures, although the intensity of talc exposure from these sources was likely affected by variables not assessed in this study.

Cancer 50:372-376, 1982.

THE POSSIBILITY that ovarian cancer may be caused by exposure to certain hydrous magnesium silicates such as talc and asbestos has been raised by several researchers.¹⁻³ The lack of epidemiologic studies regarding this hypothesis prompted us to investigate talc exposure in a case-control study of ovarian cancer.

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Supported by Grant Number 5-ROI CA24209, awarded by the National Institutes of Health, DHEW.

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This study could not have occurred without the generous participation of many clinicians and institutions in the greater Boston area including Dr. Emanuel Friedman of the Beth Israel Hospital, Drs. Robert Knapp and Thomas Grulliths of the Brigham and Women's Hospital and Sidney Farber Cancer Institute, Dr. Arthur Hassett of the Brockton Hospital, Dr. Joel Rankin of the Framingham Union Hospital, Dr. Edward Copenhaver of the Lahey Clinic Foundation, Dr. James Nelson of the Massachusetts General Hospital, Dr. Clement Yahia of the New England Deaconess Hospital, Dr. Lalita Gandbhir of the Pondville Hospital, Dr. James Whelton of Saint Elizabeth's Hospital, Dr. Stephen Alpert of the Salem Hospital, Dr. Richard Hunter of the University of Massachusetts Medical School. The superb clerical and technical assistance of Ms. Eileen McManus, Ms. Sally Cassells, and Ms. Christine Peters is also gratefully acknowledged.

Accepted for publication December 29, 1981.

Methods

The cases studied were women with ovarian cancer, diagnosed between November 1978 and September 1981 and identified through the pathology logs or tumor boards of twelve participating hospitals in the Greater Boston area. The study was restricted to English-speaking residents of Massachusetts ranging in age from 18 to 80 years. During the study period, 297 eligible cases were identified. Physicians denied permission to contact their patients in 13 instances. Fourteen patients declined to participate, and 14 other patients had died or moved before they could be contacted.

For each of the 256 interviewed cases, slides of the surgical specimens were reviewed by two authors (W.R.W. or R.E.S). Eighteen cases were excluded as nonovarian primaries. Each ovarian tumor was classified according to the Histological Classification of Ovarian Tumors of the World Health Organization.⁴ The present analysis was restricted to 215 white women with epithelial cancers, including 39 with tumors of borderline malignancy and their matched controls.

Control cases were identified through the Massachusetts Town Books, annual publications that list residents by name, age, and address. Controls were selected randomly from those women who matched cases by precinct of residence, race, and age within two years. Additionally, it was required that a subject be excluded

as a control if she had had a bilateral salpingo-oophorectomy, but subjects were not excluded because of prior hysterectomy or other types of pelvic operations. Women who had had pelvic operations were generally confident in their knowledge of whether their ovaries had been removed, but the nature of the operations could not be verified by hospital records in each instance. Women whose statements could not be verified were included or excluded on the basis of their recollection of the surgery. The 215 controls in this study were eventually obtained from a total of 475 potential controls identified through the Town Books. Fifty-six (12%) of the total could not be reached because they had moved, died, or had disconnected or unlisted phones. Twenty-nine (6%) of the total were ineligible because of a history of bilateral salpingo-oophorectomy, while 20 (4%) were of the wrong age or race or did not speak English. Of the total potential controls, 155 (33%) refused to participate. If the 215 cases are characterized as to ease of matching, 121 (56%) cases were matched with no refusals, 58 (27%) were matched after one refusal, and 36 (17%) were matched only after two or more refusals.

Interviews were conducted personally to assess a number of factors from the menstrual and reproductive history, medical and family history, and environmental exposures. This report will deal only with the results of several questions related to potential or definite talc exposure by way of contraceptive practices, operations, or perineal hygiene. Subjects were stratified by potential confounders described below, and adjusted relative risks associated with these exposures were calculated by the Mantel-Haenszel procedure as adapted by Rothman and Boice.⁵ To accommodate other confounders as well as the matched design in the data collection, logistic analysis for matched data as described by Breslow *et al.*⁶ was also employed.

Results

The average age (and standard error of the mean, SEM) for cases was 53.2 (1.0) years and for controls,

TABLE 1. Characteristics of Cases and Controls

Characteristic	Cases (Total = 215)		Controls (Total = 215)	
	No.	%	No.	%
Educational level (completed college)	48	22.3	49	22.8
Religion (Roman Catholic)	126	58.6	128	59.5
Marital status (never married)	46	21.4	24	11.2
Nulliparous	78	36.3	39	18.1
Menopausal status (postmenopausal*)	137	63.7	129	60.0

* Postmenopausal at time of diagnosis for cases or for interview for controls.

53.5 (1.0) years. Table 1 shows other characteristics of subjects. Controls were comparable to cases in educational level and religion. Cases and controls differed significantly in marital status and parity with parity being the more important discriminator between them. Sixty-four percent of the cases were postmenopausal at the time of diagnosis, whereas 60% of controls were postmenopausal. Of these, 15 cases and 20 controls had had an artificial menopause. Parity and menopausal status were considered important potential confounders in this analysis and were adjusted for as described above.

Relative risks associated with potential talc exposure from contamination on rubber products are explored in Table 2. Although surgical gloves of recent vintage are dusted with starch, talc contamination may still be found.⁷ Thus, a history of pelvic operations (appendectomy, cesarean section, hysterectomy, and other operations on internal genital organs other than bilateral salpingo-oophorectomy) was determined in cases and controls. Excluding operations associated with the diagnosis or treatment of the ovarian cancer among the cases, no excess in the occurrence of pelvic operations was noted. The greatest opportunity for talc exposure from surgery occurred before 1950, when talc was the

TABLE 2. Relative Risks (RR) for Common Epithelial Ovarian Cancers Associated with Potential Talc Exposure from Contamination on Rubber Products

Exposure	Cases		Controls		Crude RR	Adjusted RR*	95% Confidence limits
	Total	No. (%) with exposure	Total	No. (%) with exposure			
Pelvic surgery	215	78 (36.3)	215	75 (34.9)	1.06	1.17	(0.76-1.79)
Pelvic surgery (prior to 1950)	215	51 (23.7)	215	48 (22.3)	1.08	1.12	(0.69-1.82)
Use of condom†	169	19 (11.2)	191	30 (15.7)	0.68	0.77	(0.41-1.44)
Use of diaphragm†	169	37 (21.9)	191	35 (18.3)	1.24	1.19	(0.69-2.05)

* Adjusted for parity (nulliparous, parous) and menopausal status (pre- and postmenopausal).

† Restricted to subjects who had ever been married.

TABLE 3. Relative Risks (RR) Associated with Using Talc for Storage Among Diaphragm Users* by Duration of Use of Diaphragm

Duration of diaphragm use	Cases		Controls		Crude RR	Adjusted RR†	95% Confidence limits
	Total	No. (%) who used talc on diaphragm	Total	No. (%) who used talc on diaphragm			
Total diaphragm use less than five years	13	6 (46.2)	21	8 (38.1)	1.39	1.82	(0.42-8.00)
Total diaphragm use five or more years	27	16 (59.3)	19	11 (57.9)	1.06	1.23	(0.36-4.17)
All users	40	22 (55.0)	40	19 (47.5)	1.35	1.56	(0.62-3.88)

* Includes all women who used diaphragm regardless of marital status.

† Adjusted for parity and menopausal status.

predominantly used dusting powder for surgical gloves. However, no significant excess of pelvic operations prior to 1950 was observed for cases.

The patients (cases) who, at sometime, had been married, chose condoms less frequently and diaphragms more frequently for contraception than the control group, but neither difference was statistically significant. Condom use is not necessarily associated with talc exposure. Not all brands of condoms are dusted with talc, and lubricants could affect the shedding of talc from the condom. Unfortunately, details on specific brands of condoms were not obtained. Similarly, talc exposure is not a necessary consequence of diaphragm use. We inquired specifically about the practice of dusting the diaphragm with talc for storage after use (Table 3). Among all subjects who had used a diaphragm, there was no significant excess of cases who regularly stored their diaphragm using talc, nor was any greater risk associated with this practice observed among women who had used the diaphragm for longer durations. Before the risk from this exposure can be adequately assessed, greater detail is needed including frequency of use and whether the powder was washed off prior to use. Furthermore, contraceptive jellies used with the diaphragm could affect the transport of talc in the genital tract.

Hygienic practices involving talc were also studied. Specifically, we inquired whether women had regularly used talc as a dusting powder on the perineum or regularly dusted sanitary napkins with talc (Table 4). Ninety-two (42.8%) of the cases had talc exposure by either or both of these routes compared with 61 (28.4%) of the controls. The adjusted relative risk was 1.92 ($P < 0.003$) with 95% confidence limits of 1.27-2.89 compared to subjects who had neither exposure. Sixty (27.9%) cases and 48 (22.3%) controls had either used talc for dusting or on napkins but not both. This difference yielded an adjusted relative risk of 1.55, which was of borderline significance ($P = 0.06$). The greatest risk occurred in women who had both exposures (use on the perineum and on napkins) compared to women who had neither exposure. Thirty-two (14.9%) of cases were in this category compared with 13 (6.0%) controls, for an adjusted relative risk of 3.28 ($P < .001$) and 95% confidence limits of 1.68-6.42. The histologic characteristics of tumors developing in women with perineal exposure to talc did not differ significantly from those in women without perineal exposure to talc (Table 5). In addition, the proportion of cases with tumors of borderline malignancy was identical among those with and without perineal exposure to talc. Twenty-two (18%) of 123 cases without the exposure had tumors of bor-

TABLE 4. Relative Risks (RR) for Common Epithelial Ovarian Cancers Associated with Talc Exposure in Perineal Hygiene

	No perineal exposure	Any perineal exposure	Types of perineal exposure		
			As dusting powder but not on napkins	On napkins but not as dusting powder	Both on napkins and as dusting powder
Cases (Total = 215)	123 (57.2%)	92 (42.8%)	43 (20.0%)	17 (7.9%)	32 (14.9%)
Controls (Total = 215)	154 (71.6%)	61 (28.4%)	34 (15.8%)	14 (6.5%)	13 (6.0%)
Crude rr	1	1.89	1.58	1.52	3.08
Adjusted RR*	—	1.92	1.55		3.28
95% confidence limits	—	(1.27-2.89)	(0.98-2.47)		(1.68-6.42)

* Adjusted for parity and menopausal status.

derline malignancy compared to 17 (18%) of 92 with the talc exposure.

Discussion

The argument linking talc and ovarian cancer includes four elements: the chemical relationship between talc and asbestos, asbestos as a cause of pleural and peritoneal mesotheliomas, the possible relation between epithelial ovarian cancers and mesotheliomas, and the ability of talc to enter the pelvic cavity. The mineral talc is a specific hydrous magnesium silicate chemically related to several asbestos group minerals and occurring in nature with them. Generic "talc" is seldom pure and may be contaminated with asbestos, particularly in powders formulated prior to 1976.^{8,9}

Epidemiologic studies have clearly linked lung cancer and pleural and peritoneal mesotheliomas with asbestos exposure.¹⁰ An excess of similar pulmonary lesions has been reported in talc workers and seems to be correlated with the amount of asbestos contamination in the talc deposits worked.¹¹ Graham and Graham¹ were able to induce ovarian neoplasms in guinea pigs with asbestos and suggested that ovarian cancer could be related to asbestos exposure, noting the similarity between mesotheliomas and ovarian cancers. Parmley and Woodruff¹² further emphasized this similarity and popularized the pelvic contamination theory, which proposed that environmental carcinogens might enter the pelvic cavity via the genital tract. Years earlier it had been observed that inert carbon particles placed in the vagina immediately prior to hysterectomy could be recovered from the fallopian tubes.¹³ Although greeted with skepticism, the finding of talc particles embedded in normal and abnormal ovaries suggests that talc is a substance that can enter the pelvic cavity via the vagina.²

Although no consensus concerning the risks of talc has emerged from letters, editorial and articles,^{3,14-16} participants in the discussion have agreed upon the need for epidemiologic studies of ovarian cancer and talc exposure. In this case-control study of ovarian cancer of the epithelial variety, we investigated several sources of potential talc exposure. Among these, the only significant finding was an association between ovarian cancer and hygienic practices involving the use of talc on the perineum. It is especially notable that women who regularly had both dusted their perineum with talc and had used it on sanitary napkins had more than a three-fold increase in risk compared to women with neither exposure. Several potential biases must be considered in interpreting this association.

The observation by Wynder *et al.*¹⁷ that menstrual characteristics may differ between women with ovarian cancer and controls might suggest that such differences may confound the association between perineal use of

TABLE 5. Characteristics of Ovarian Cancer in Women with and without Perineal Exposure to Talc

	No perineal use of talc	Any perineal use of talc
	No. (%)	No. (%)
Serous	66 (53.7)	45 (48.9)
Mucinous	16 (13.0)	14 (15.2)
Endometrioid and clear cell	32 (26.0)	24 (26.1)
Other and undifferentiated	9 (7.3)	9 (9.8)
Total	123 (100)	92 (100)

talc and ovarian cancer. We found that menstrual characteristics of cases and controls were virtually identical in this study. Fifty-three (24.7%) cases complained of moderate or severe dysmenorrhea compared to 56 (26.0%) controls. Twenty-five (11.6%) cases complained of irregular periods compared to 32 (14.9%) controls. The average numbers (and SEM) of days of flow and cycle length were, respectively, 4.9 (0.1) and 28.9 (0.3) days for cases and 4.9 (0.1) and 29.6 (0.3) days for controls.

Since entry of talc into the pelvic cavity is prevented by hysterectomy or tubal ligation, it might also be argued that the inclusion of subjects with pelvic surgery in the analysis may obviate any association between talc and ovarian cancer. It should be noted that such surgery generally occurred near the end of reproductive life for both cases and controls, probably after most significant talc exposure had already occurred. The exclusion of such subjects from the analysis did not substantially alter the observed associations. For example, the adjusted relative risk for the use of talc both on the perineum and sanitary napkins was 2.79 ($P < 0.003$) in the group without pelvic surgery compared to 3.28 observed for the entire group.

In terms of other confounders, the association persisted after adjustment for menopausal status and parity. We also applied multivariate logistic regression for paired observations.⁶ The maximum likelihood estimate of relative risk associated with any perineal use of talc was 1.61 ($P = 0.03$) with 95% confidence limits of 1.04–2.49 after simultaneous adjustment for religion, marital status, educational level, ponderal index, age at menarche, exact parity, oral contraceptive or menopausal hormone use, and smoking.

Our sample of cases represents more than 50% of ovarian cancer cases diagnosed in Boston residents in the study period. Therefore, it is difficult to conceive of a plausible bias in the selection of cases that would yield this excess use of talc. There is reason for concern that the high refusal rate among the controls may have introduced a selection bias among the controls. But,

when we restricted the analysis to the 121 cases who were matched without a control refusal, we again found a significant association between talc use and ovarian cancer. For women who had used talc both in dusting and on the perineum we found an adjusted relative risk of 2.44 ($P < 0.05$). Interviewer bias is also unlikely to explain the association. Of the 18 women who were initially interviewed as ovarian cancer cases but later excluded as having metastatic tumors to the ovary, only one (5.6%) had both perineal and napkin exposure as compared with 15% in cases and 6% in controls.

Experimental data which might bear on the carcinogenicity of talc come primarily from models using pleural implantation of various minerals in rats.¹⁸ These data suggest that carcinogenicity is dependent primarily upon the shape of the particles with long thin fibers such as those occurring in crocidolite asbestos being most carcinogenic. Talc consists primarily of plates but may contain fibers, although voluntary guidelines to limit the content of asbestiform fibers in consumer talcums were proposed by the cosmetics industry in 1976.¹⁹

If talc is involved in the etiology of ovarian cancer, it is not clear whether this derives from the asbestos content of talc or from the uniqueness of the ovary which might make it susceptible to carcinogenesis from both talc and other particulates. With ovulation entrapment of the surface epithelium of the ovary into the ovarian stroma occurs. If present, talc or other particulates might be incorporated into these inclusion cysts. Apparently implantation of foreign bodies into the lumens of epithelial lined organs provides a favorable environment for carcinogenesis.²⁰ Alternatively, talc might serve to stimulate entrapment of the surface epithelium and act in the same way that "incessant ovulation" has been proposed as an etiologic factor for ovarian cancer.²¹ Given the histologic and clinical diversity of ovarian cancer, talc exposure is unlikely to be the only cause. Undoubtedly, reproductive experiences such as pregnancies and, perhaps, oral contraceptive use play a role in its etiology.²¹⁻²³ The possibility that talc exposure interacts with these variables deserves further investigation.

It is hoped that this report will stimulate further study of talc exposure in relation to ovarian cancer. Animal studies would be helpful to determine whether and under what circumstances ovarian tumors may be induced by various talc preparations. Epidemiologic studies should focus on opportunities for excessive vaginal contamination with talc such as when it is repeatedly used in perineal dusting powders or sprays and in or on tampons, sanitary napkins, or other products intended for

intravaginal use. More precise details on the exact nature and frequency of the exposure and the amount and specific brand of powder used are essential. Opportunities for talc exposure are widespread and pervasive,²⁴ but that should not discourage epidemiologists from studying this potentially important exposure in relation to ovarian cancer.

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recent years was estimated to be 1,600 years old.

Mound Overlooking Ocean

The first of the bodies was discovered in a mound overlooking the Arctic Ocean in late July by two residents of the city of Barrow, who were looking for artifacts to sell to tourists and antique dealers.

A nearby group of archeologists was called in. They worked around the clock in teams for five days, recording precisely where the bodies lay and what was around them.

Garments and almost all the implements with the bodies are believed to be of the same type that the Inupiat had been using for at least 4,000 years. The only exception is a metal knife-blade. Its origin is unknown and at present, it is the strongest clue to link the Eskimos to the 19th century.

The archeologists were under the direction of Dr. Albert R. Dekin Jr., associate professor of anthropology at the State University of New York at Binghamton, Dr. Raymond R. Newell, a re-

main intact. There has been dehydration, but these two bodies still contain blood that can be analyzed. The other bodies, which were nearer the surface, are partly or totally skeletonized.

Dr. Lobdell noted that the Inupiat Eskimos, like other Eskimos in Alaska, burned seal oil in their homes routinely before modern times. Thus, their lungs will be checked to see if the burning of the oil in close quarters had any adverse health effect.

Dr. Dekin and his colleagues were directing an archeological dig about 300 yards from where the first body was found. He explained that Barrow, a city of approximately 3,000 people, many of them Inupiat, contains quite a number of mounds that mark where the ancestors of the present population had their dwellings.

Aboriginal Type of Implements

Dr. Dekin said that, with the exception of the metal knife-blade, the implements found were aboriginal in nature. The other knife-blades were made of slate or chipped flint.

Talcum Company Calls Study On Cancer Link Inconclusive

A major talcum powder manufacturer, while criticizing a recent study linking the use of talcum powder by women to ovarian cancer, said it would further investigate any possible relationship between cosmetic-grade talc and the development of disease.

The study, published in the Aug. 15 issue of the journal Cancer, found that women who dusted their genitals and sanitary napkins with talcum powder were three times as likely to develop cancer as women who did not.

The cases studied involved 215 women diagnosed as having ovarian cancer in Boston hospitals from November 1978 to September 1981. About 43 percent of the women said they dusted talc on their genitals or on sanitary napkins, against about 28 percent of a control group of similar background, age and marital status who said they did not use talc.

But the principal author of the study, Dr. Daniel W. Cramer, an obstetrician and gynecologist, said further studies would be needed before doctors could recommend that women avoid using talc. In a statement released by Brigham and Women's Hospital in Boston, Dr. Cramer said, "It is hoped that this report will stimulate further study of talc exposure in relation to ovarian cancer."

Questioned About Current Use

James Murray, a public relations officer for Johnson & Johnson, a talcum powder manufacturer, said the study was inconclusive because it had asked the women about current use of talc rather than about use over a period of years, when they would have been developing the cancers.

But he added: "We agree more study is needed, and we are going to conduct appropriate new studies. We feel there is a vast amount of published research

on talc in humans and animals that has shown no tendency of pure cosmetic-grade talc to cause cancer."

Dr. Cramer's study suggested that contamination of the talc might have caused the cancers. "If talc is involved in the etiology of ovarian cancer," it said, "it is not clear whether this derives from the asbestos content of talc or some uniqueness of the ovary which might make it susceptible to carcinogenesis from both talc and other particulates." Most baby powder is made essentially of talc.

In the 1970's talc, a mineral mined widely in Europe, Canada and the United States, was often found to be contaminated with asbestos, a known cause of cancer. For instance, researchers at Mount Sinai Medical Center in New York found asbestos in 10 of 20 samples of cosmetic talc taken before 1973.

The industry was informed of these and similar findings and is believed to have changed its methods and sources of mining. Mr. Murray of Johnson & Johnson said, "We can confirm that our talc doesn't contain any asbestos."

WALTER H. PRESTON

Walter H. Preston, a singer who performed on radio in the 1930's and 40's, died Saturday at a nursing home in Greenport, N.Y. He was 81 years old.

Mr. Preston appeared as a soloist on programs carried by NBC networks, including "The Revelers," "The A. & P. Gypsies" and "The Armchair Quartet." He also appeared on the "Bell Telephone Hour," "Firestone Hour" and "Alec Templeton Show."

Surviving are his wife, Frances; 2 sons, Walter Jr. and Raymond; 2 daughters, Virginia Grattan and Joan Viennesse; 18 grandchildren, and 5 great-grandchildren.

The Inupiat have since adopted modern construction techniques, placing their homes up on poles, and have built in areas more secure from ice blocks.

Deaths

AARON—Ronald M. The Officers and Members of Temple Sinai of Roslyn record with profound sorrow the untimely passing of our member. Our condolences to the family.
Rabbi Norman Kahan
Marlin Marlowe, President

AUGEROT—William Jules on August 11, 1982. Beloved husband of Joan (nee Brose), devoted father of Valerie Colao, William J., brother of Lynn Simon, grandfather of Joseph Jules, uncle of William Richardson, M.D. and Pamela Richardson. The family will receive friends 2-5 and 7-10 PM at John F. X. McKeon and Son Funeral Home, 2405 East Tremont Ave. (at Castle Hill Ave.) Bronx. Mass of Christian Burial at St. Peter's Episcopal Church, Saturday 9:30. Interment Holy Sepulchre Cemetery.

BERLIN—Helen. Beloved wife of the late Samuel. Devoted mother of Garry. Dear sister and cherished grandmother. Services Thursday, 11:45am at "Guterman's" Rockville Centre, L.I.

BIER—Ethel. Wife of the late Edward, beloved mother of Lawrence and the late Florence Schechter, cherished grandmother of Lynn Roggemann, Howard Schechter and Edward Bier, great-grandmother of Mark, Florence and Melanie. Dear sister of Betty Kober. Services Friday 11:30AM at "The Riverside", Amsterdam Ave & 78 St.

BRAESTRUP—Carl Bjorn. On August 8, in Middletown, CT. Beloved husband of Eisebet Kampmann and father of Peter Braestrup and Ellen B Strickler. Survived by 5 grandchildren. A memorial service was held at the First Congregational Church in Guilford, Ct., August 10.

BUTLER—Alice Goddard in Princeton on August 10th. Sister of Mrs. Gordon T. Waldron of Princeton. A memorial service will be held at a later date. Memorial contributions may be made to the White Memorial Conservation Center, Litchfield, Connecticut 06759.

CANDELA—Christina. Aged 37. Of Huntington. Formerly of Queens. Beloved wife of Albert. Loving mother of Derek, Wes and Fawn. Dear daughter of Jesus and Josefa Gonzalez. Sister of Dennis. Memorial services Saturday 11AM, Old First Church, Huntington.

CARMODY—Mary Therese. 34 of Spring Lake on August 10, 1982, beloved daughter of the late John A. Carmody Jr. and Marion O'Neill, dear sister of John, Suzanne, James, William, Denise Raffiff, Cathleen, Francis, Edward, Margret, and Ann-Marie, dear Aunt of one nephew and two nieces. Funeral 9 AM Saturday from the Meehan Funeral Home, 555 Warren Avenue, Spring Lake Heights, Mass 9:30 AM Saint Catherine's, RC Church, Spring Lake. Interment Saint Catherine's Cemetery, Sea Girt. Visitation Thursday and Friday, 2-4, 7-9 PM.

CARUSO—Anna (nee Cianelli) on August 11, 1982. Beloved wife of the late Anthony, loving mother Jane Hessing, Dr. Robert and Dr. Walter, dear sister of Mary Guipone, also survived by seven grandchildren. Reposing at the Harden Funeral Home of Bayside, Northern Blvd. at 209 St. Mass of Christian Burial Immaculate Conception R.C. Church, 9:30AM Friday, Entombment Ferncliff Cemetery.

CHAPMAN—Helen August 10. Beloved wife of Peter D. Star. Mother of Adam Standish. Heidi Chapman by devoted Lenore Shaw. Memorial service Rochester New York. In lieu of flowers, family requests be made to The Association.

CROWELL—Alice. Executives Board of Directors of the Navy League States. member of the past. He will be missed and loved on deepest sympathy.

CROWELL—Alice. Academy Assn. at the passing of Associate Member hardworking and devoted. He will be missed and loved on deepest sympathy.

Bradford D.

de Gersdorff—Clara. Of Helena O. Brother of Al Morgan. Fair Gertrude. Funeral August 14th. MA. Memorial service to be announced.

DICKSTEIN—Ruth. Samuel Dicks Chapter B'nai their heartfelt Dickstein and Paul Bisgaler.

DOLNEY—Samuel. Band of Gerak of Helene, So and Russell. Sister of Michael. Services Friday, side Memorial Blvd and 66th St.

DOWLING—Joseph. 8, 1982. Beloved daughter of Nora, Matt Dowling. Dear sister of Larch Knott. Reposing at the Home of the Mass at St. Labre Church. L.I. Neth.

DUBERSTEIN—mother of John Duberstein. Sister of Dr. Eliza Dr. Cathrine. Grandmother of Troy; sister of. Died August 10. private. Conf. favorite charity.

DUBERSTEIN—Chapter of the Sclerosis Society. Justice Maxine and her family. her mother, Ann F. Ross Johnson.

FELDSBERG—L. Synagogue record sorrow the dear member. To his and family with heartfelt sympathy. Henry H. Ira Leon Re.

NY Times 8/12/82