Committee To End Radiological Hazards
166 Second Avenue
New York, New York 10003

SOUTH OF THE PARTY OF THE PARTY

Mary Hays Weik Secretary GR 7-5935

Director, Division of Radiological and Environmental Protection U.S. Atomic Energy Commission Washington, D.C. 20545 - May 19,1972 -

Re: Invited Citizens! Comments on the Environmental Impact of the Propos Issuance of an AEC Operating Licer to Con-Ed!s Indian Pt.Nuclear Reac DOCKET NO.50-24

Dear Sir:

Thank you for sending at my request the AEC's "Draft Detailed Statement" prepared by your department on the subject named above. It is obvious that such a represent an independent agency having no connection, actual or implied, with the Atomic Energy Commission - which itself both sited and regulates the project concerned - would have been more convincing. Our comments on the Statement's centents follow:

In issuing this evaluation of the environmental impact of a proposed second nuclear reactor at Indian Point, the U.S.Atomic Energy Commission has placed on the public recan amazing collection of irrelevant, useless, and deliberately confusing items, which do little to throw any light on the situation involved:

- 1) Its concern for the fate of Hudson River fish entirely overshadows any concern for the area's human residents. While infinite details are given on the reactions of various aquatic organisms the "thermal tolerance" of macroinvertebrates, the "reproductive habits of zooplankton species," etc., etc. no reference is made to the alarming mortality record found among residents of nearby local communities directly downwind to the plant, as shown in local statistics of the region records in the enclosed Chart of Deaths from Brain & Breast Cancers and Leukemia, found in the same "Cortlandt Town" area before and after the nuclear plant was built.
- 2) The Report's figures on "low-level" radioactive releases from the plant are of little significance, since it ignores completely the well-known facts on serious internal damage by "contact radiation" from chronic low-level doses ingested or inhaled, as pointed out on the enclosed page of comments by the Viennese physicist Dr. Karl Newak. These omitted facts make the Report's alleged "minimal and harmles plant releases, both deceptive and absurd.
- 3) Since the "radiation limits" permitted in the Indian Point area by the AEC's "100FR20" and "100FR100" standards are fantastically high (44,000 curies a day, 16 million curies a year, a possible 3,000 rads in individual thyroid doses, as cited in the AEC's "Initial Decision" on the 1969 Construction Permit for Indian Point 3), even the "low percentages" of those Limits presently alleged in use in the Draft Environmental Statement would be themselves quite substantial and damagi (I doubt that the thousands of dead fish found in a recent Indian Point "fish kill actually needed the "impingement" on metal screening grates to finish them off!)
- 4) It seems obvious that the alarming escalation shown almost a year ago on the enclosed sheet of official mortality records for the surrounding Cortlandt Town region, demands far from a new permitter operation of an additional second Nucle Plant, 4 times larger than Indian Point I an immediate shutdown of all Indian Ponuclear facilities, with the "dismantling and entembment" of this deeply contaminated installation described on pages V-75 and V-76 of your Draft Report, to preven a problem of unprecedented disaster for populations of this area for centuries to c

Surely there must be a better way of reclaiming a wasteful and ruinous investment in nuclear power than by killing off the helpless citizens of the Indian Point area!

COPIES TO OTHER INTERESTED PARTIES

7000

Many M. Wrik

----



Regulatory

File Cy.

Received w/Lir Dated 5-19-72

# Cancer and Lenkemia Rise

# Around Indian Point

by Mary Hays Weik

Committee Chief Note Spurt In Mortality Near Nuclear Plant

A significant new report has just been issued by the <u>Committee To End Radiological Hazards</u> of New York City, on health conditions around the Indian Point atomic plant. The report shows percentage of increase in deaths by Brain and Breast Cancers and Leukemia in the Cortlandt Town area directly surrounding the atomic plant, during the 5 years 1963-67, after the plant began to operate in August '62, as compared with the 5 years, 1957-61, just before its start. Included population figures for 1960 and 1965 show that cancer increase has far outstripped population growth.

The report is based on figures contained in the N.Y. State Health Dept. report, "Review of Mortality Statistics In the Northwestern Section of Westchester County." The State report is a curious document. It was published shortly after this writer revealed, as a citizen intervenor at the 1969 Indian Point Hearing an unusual number of Cancer Deaths in an area of Montrose downwind to the atomic plant. The State report shows an obvious intention to confuse and mislead the public; for the local map it includes so confuses the boundaries of the area involved in the Montrose cancer deaths as to make difficult a localized study of the problem.

Neither State nor County Health Department seems worried by the situation shown by their own figures. I was surprized to receive a "personal copy" of the report from State Commissioner of Health Dr. HOLLIS S. INGRAHAM, who had refused to honor my citizen's subpoena to testify at the 1969 Indian Point Hearings. In a letter to the AEC sent me with the report, Dr. Ingraham said: "We find no evidence of increase in . . cancer mortality in the vicinity of Indian Point;" and DR. DONALD R. REED, President of the Westchester County Board of Health, in a letter to a local citizen listing figures which amounted to an increase of 22% in MONTROSE and an increase of 150% in BUCHANAN, wrote: "These figures would indicate to me that the cancer deaths have not increased in the villages of Buchanan or Montrose(!)."

The latest (1971) Rand-McNally Commercial Atlas shows Montrose population as 2200. But the State report cited submerges the Montrose village figure in a vague total, numbering 22,000, called the "Rest of Cortlandt Town." (This greatly dilutes, of course, the Montrose cancer mortalities.) Yet local records

'show that 3 out of the 4 brain cancer deaths reported in 1963-67 for this Cortlandt area of 22,000 were actually registered from the Montrose section I described in "The Montrose Catastrophe" - population, less than 500!

Unfortunately, the people who prepared the delusive State report made one false step: In making their report, they revealed local statistics not available to the general public or reported in "U. S. Vital Statistics" (because the communities involved are too small for individual mention). In other words, the report brought into the open statistics heretofore available only to the two Health Departments. These figures happen to be most significant.

The cancer deaths shown in the New York committee's statement (taken from Tables VII and Table VII A of the State "Review of N W Westchester County" cited above) though damning as evidence, would appear to be small in number. They will certainly be labeled as such and called "unimportant" by AEC and Con-Edison attorneys. But this is far from true, as any honest statistician knows. For:

- 1) By the State figures, Peekskill, Buchanan, and Croton-on-Hudson are now implicated in the Indian Point cancer problem. (What about other unnamed Westchester communities?)
- 2) In 11 out of 12 community situations named, an unbroken increase of cancer deaths is shown. In the 12th, Peekskill, the number of brain cancers remained the same in the two periods covered. Yet, even there, unreported 1968-71 figures may now have changed the picture.
- 3) If such an increase could occur with only the 265-megawatt Indian Point I reactor in operation what would result with the addition of the 873-meg. Reactor II 4 times as large as Indian Point I?
- 4) If such an increase could occur with only Indian Point I's Pressurized Water 265-meg, reactor, imagine the effect of adding, as planned, Reactors III, IV and V (of 1100-meg, each) all of Boiling Water type since airborne radioactive releases from this type of reactor are known to be enormously larger. What will be the effect downwind then?

- Copyright 1971, Mary H. Weik -

From Official Mortality Statistics in 1969 New York State Dapt, of Health Publication, Review of Mortality Statistics in Northwestern Section of Westchester County - Tables VII&A: "Number of Deaths (Brain and Breast Cancers & Leukemia) for Cortlandt Town (Including) Peckskill City, 1957 - 1967" \*\*\*

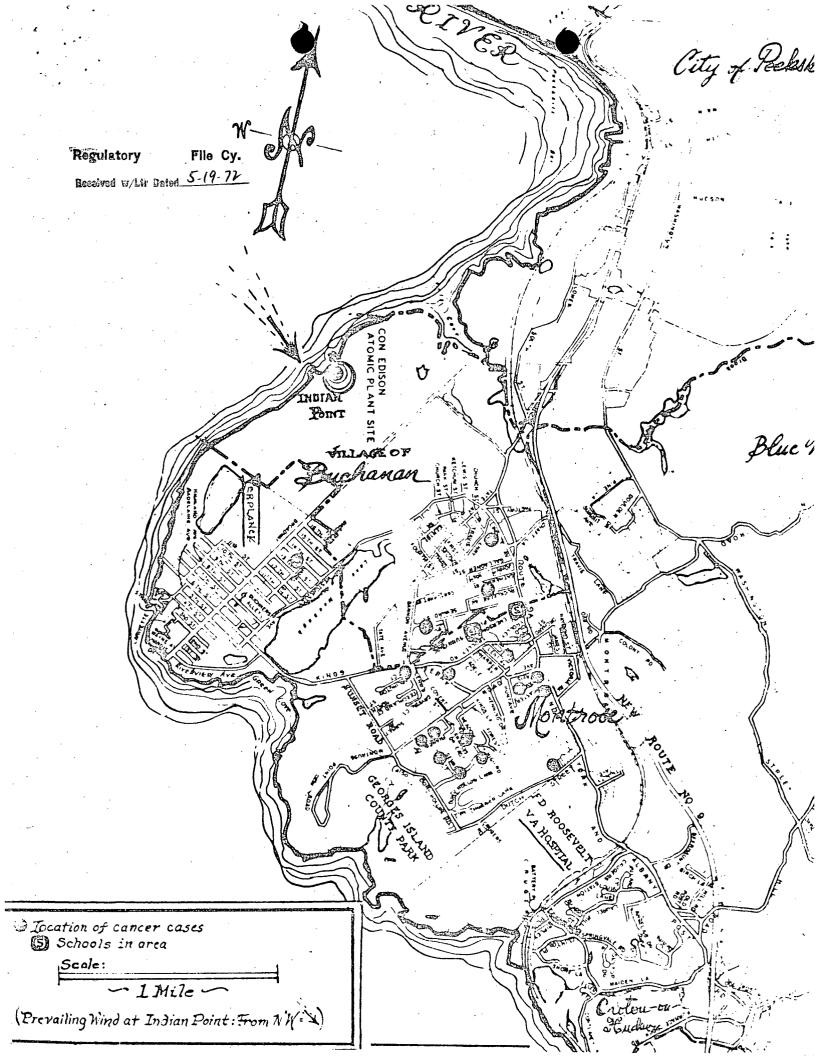
Areas	CANCER of BRAIN and Norvous System (193)			BREAST CANCER (WHO International Code 170)			LEUKEMIA (International Code 204)			Population			
	57-161	163-167	% Increase	57-'61	163-167	% Increase	57-'61	163-167	% Increase	1960	1965	Increase	
Poekskill	4	4		20	25	25 %	4	10	150 %	18,737	18,504	(Afrikarop)	
Croton-on-Hudson	-	6	600 %	7	10	43 %	3	6	100 %	6,812	6,941	<u>Inc</u> : 2%	
Buchanan	-	1	100 %	_	2	200 %	-	ı	100 %	2,019	2,168	" 7%	
Rest of Cortlandt Town (including MONTROSE)	-	4 *	400 %	4	12	200 %	2	5	150 %	17,505	** 22,231	" 27%	
TOTAL Cortlandt Town	.4	15	275 <b>%</b>	31	49	58 %	9	22	144 B	45,073	49,844	# אַנג	

<sup>\*</sup> Three of these 4 deaths were recorded for a small section (c. 500 population) of MONTROSE directly downwind to the Indian Point atomic plant.

\*\* MONTROSE total population was only 2200 in 1970 (Rand McNally 1971 Commercial Atlas & Marketing Guide).

Conclusions issued by State and County Health Boards are in curious contradiction to their own records:

In spite of the increases shown in the N.Y.State Health Doords missioner HOLLIS S. INGRAHAM, in his presentation latter to the U.S. Atomic Energy Commission of March 23. 1970 accompanying the above report, said: "We find no evidence of an increase in . . cancer mortality in the vicinity of Indian Point;" and Dr. DONALD R. REED, President of the Westchester County Board of Health, in a March 18, 1970 letter answering a local citizen's inquiry, in which Dr. REED himself cited a rise in Cancer Death figures in the 4 years after Indian Foint's start (1963-1966) which, compared to the 4 years preceding its start (1958-1961), amounted to an increase of 22% in MONTROSE and an increase of 150% in BUCHANAN, wrote: "These figures would indicate to me that the cancer deaths have not increased in the villages of Buchanan or Montrose (1)."



# BILINGUAL Q U O T E S

FROM: Committee To End Padiological Hazards
166 Second Avenue, New York, NY 10003, USA
Mary Hays Weik, Secretary (GR 7-5935)

Regulatory File Cy.

## ATOMIC PLANT RELEASES CANNOT BE FATRLY COMPARED TO NATURAL BACKGROUND RADIATION

### (English translation):

Beesleed w/Lir Bated 5-19-72

"A nuclear power plant releases radioactivity to its environment through its chimney and cooling-water. Even in undisturbed normal operation, the chimney emits radioactive gases and particulate matter which are distributed through the surroundings.

"Company 'experts' claim that the amount released is minimal. They calculate high plant releases by comparing them with natural background radiation. Actually, the effect of radioactive material taken into the body, as is that from the plant's chimney and cooling-water, through inhalation, or by way of the food chain and drinking-water, is significantly higher (than company figures show), and impossible to measure exactly.

"If a (radioactive) particle merely lies on the ground, then its effect is minimal although its radiation may be dangerously high. If the particle, however, is deposited on a mucous membrane by inhalation or ingestion, or if it settles in an organ due to its chemical nature, then as a result of contact radiation, its effect will be increased to the square of its ownvalue and give an extraordinarily strong dose of radiation to its direct surroundings, leading to death of the cells contacted or severe damage to those it touches.

"Especially effective in this connection are Alpha and Beta rays, whose effect would otherwise be screened out by the atmosphere. These inner effects cannot be controlled from without. Thus numbers of Cancers and other damages can arise; above all, genetic damage and dispass if the reproductive organs are affected. Moreover, this radioactive matter stored up in the body increases with time, and the damages build up . . "

(From Der Skandal Atomkraftwerk by Ing. KARL NOWAK, Vienna physicist and editor of "Noue Physik", in an article in "Oberdsterreich. Wochenpost," Austria)

# (Original German):

mEin Kernkraftwerk gibt über Schornstein und Kühlwasser Radioaktivität an die Umgebung ab. Der Schornstein auch im ungestörten Normalbetrieb laufend radioaktive Gase und Schwebstoffe ausstöszt und in der Umgebung verteilt.

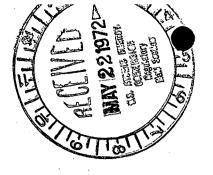
Won den bezahlten Experten' wird es so dargestellt, als sei das minimal. Man rechnet mit der erhöhten Umgebungsstrahlung und vergleicht sie mit der natürlichen Strahlenbelastung. Tatsächlich ist die Wirkung inkornorierter radioaktiver Stoffe, wie solche aus Schornstein und Kühlwasser über Atomluft, Nahrungskette und Trinkwasser in den Körper gelangen, ganz bedeutend höher und nicht exakt messbar.

Mliegt ein Staubkörnchen am Boden, so ist seine Wirkung minimal, mag es auch ein gefährlicher starker Strahler sein. Gelangt das Teilchen aber mit Atomluft oder Nahrung auf eine Schleimhaut oder wird es gar infolge seiner chemischen Beschaffenheit in ein Organ eingelagert so kann es infolge Kontaktbestrahlung, da die Wirkung mit dem abnehmenden Abstand quadratisch zunimmt, an seine unmittelbare Umgebung auszerordentlich starke Strahlungsdosen abgeben und so sogar zu Nekrose (Zelltod) oder schweren Zellschäden Anlasz geben.

MBesonders wirksam sind dabei Alpha- und Betastrahler, deren Wirkung sonst durch die Luft abgeschirmt wird. Diese inneren Vorgänge sind von auszen überhaupt nicht kontrollierbar. So künnen Krebsherde und andere Schädigungen entstehen, vor allem auch Erbschäden und Erbkrankheiten, soweit die Fortpflanzungsorgane beeinfluszt werden. Auch speichern sich radioaktive Stoffe im Körper und die Schädigungen summieren sich . "



166 Second Avenue New York, New York 10003



Mary Hays Weik Secretary GR 7-5935

Director, Division of Radiological and Environmental Protection U.S. Atomic Energy Commission Washington, D.C. 20545 - May 19,1972-- Re: Invited Citizens! Comments on the Environmental Impact of the Proposed Issuance of an AEC Operating License to Con-Ed!s Indian Pt.Nuclear React2 DOCKET NO.50-247

Dear Sir:

Thank you for sending at my request the AEC's "Draft Detailed Statement" prepared by your department on the subject named above. It is obvious that such a report from an independent agency having no connection, actual or implied, with the Atomic Energy Commission - which itself both sited and regulates the project concerned - would have been more convincing. Our comments on the Statement's contents follow:

In issuing this evaluation of the environmental impact of a proposed second nuclear reactor at Indian Point, the U.S.Atomic Energy Commission has placed on the public record an amazing collection of irrelevant, useless, and deliberately confusing items, which do little to throw any light on the situation involved:

- 1) Its concern for the fate of Hudson River fish entirely overshadows any concern for the area's human residents. While infinite details are given on the reactions of various aquatic organisms the "thermal tolerance" of macroinvertebrates, the "reproductive habits of zooplankton species," etc., etc. no reference is made to the alarming mortality record found among residents of nearby local communities directly downwind to the plant, as shown in local statistics of the region recorded in the enclosed Chart of Deaths from Brain & Breast Cancers and Leukemia, found in the same "Cortlandt Town" area before and after the muchear plant was built.
- 2) The Report's figures on "low-level" radioactive releases from the plant are of little significance, since it ignores completely the well-known facts on serious internal damage by "contact radiation" from chronic low-level doses ingested or inhaled, as pointed out on the enclosed page of comments by the Viennese physicist. Dr. Karl Nowak. These omitted facts make the Report's alleged "minimal and harmless" plants releases, both deceptive and absurd.
- 3) Since the "radiation limits" permitted in the Indian Point area by the AEC's "10GFR20" and "10CFR100" standards are fantastically high (44,000 curies a day, 16 million curies a year, a possible 3,000 rads in individual thyroid doses, as cited in the AEC's "Initial Decision" on the 1969 Construction Permit for Indian Point 3), even the "low percentages" of those Limits presently alleged in use in the Draft Environmental Statement would be themselves quite substantial and damaging (I doubt that the thousands of dead fish found in a recent Indian Point "fish kill" actually needed the "impingement" on metal screening grates to finish them off!)
- 4) It seems obvious that the alarming escalation shown almost a year ago on the enclosed sheet of official mortality records for the surrounding Cortlandt Town region, demands far from a new permitter operation of an additional second Nuclear Plant, 4 times larger than Indian Point I an immediate shutdown of all Indian Point nuclear facilities, with the "dismantling and entombment" of this deeply contaminated installation described on pages V-75 and V-76 of your Draft Report, to prevent a problem of unprecedented disaster for populations of this area for centuries to come

Surely there must be a better way of reclaiming a wasteful and ruinous investment in nuclear power than by killing off the helpless citizens of the Indian Point area!

2775

Sincerely, Many Hays Weik

# Cancer and Leukemia Rise Around Indian Point Com

by Mary Hays Weik

Committee Chief Notes
Spurt In Mortality
Near Nuclear Plant

A significant new report has just been issued by the <u>Committee To End Radiological Hazards</u> of New York City, on health conditions around the Indian Point atomic plant. The report shows percentage of increase in deaths by Brain and Breast Cancers and Leukemia in the Cortlandt Town area directly surrounding the atomic plant, during the 5 years 1963-67, after the plant began to operate in August '62, as compared with the 5 years, 1957-61, just before its start. Included population figures for 1960 and 1965 show that cancer increase has far outstripped population growth.

The report is based on figures contained in the N.Y. State Health Dept. report, "Review of Mortality Statistics In the Northwestern Section of Westchester County." The State report is a curious document. It was published shortly after this writer revealed, as a citizen intervenor at the 1969 Indian Point Hearing an unusual number of Cancer Deaths in an area of Montrose downwind to the atomic plant. The State report shows an obvious intention to confuse and mislead the public; for the local map it includes so confuses the boundaries of the area involved in the Montrose cancer deaths as to make difficult a localized study of the problem.

Neither State nor County Health Department seems worried by the situation shown by their own figures. I was surprized to receive a "personal copy" of the report from State Commissioner of Health Dr. HOLLIS S. INGRAHAM, who had refused to honor my citizen's subpoena to testify at the 1969 Indian Point Hearings. In a letter to the AEC sent me with the report, Dr. Ingraham said: "We find no evidence of increase in . . cancer mortality in the vicinity of Indian Point;" and DR. DONALD R. REED, President of the Westchester County Board of Health, in a letter to a local citizen listing figures which amounted to an increase of 22% in MONTROSE and an increase of 150% in BUCHANAN, wrote: "These figures would indicate to me that the cancer deaths have not increased in the villages of Buchanan or Montrose(!)."

The latest (1971) Rand-McNally Commercial Atlas shows Montrose population as 2200. But the State report cited submerges the Montrose village figure in a vague total, numbering 22,000, called the "Rest of Cortlandt Town." (This greatly dilutes, of course, the Montrose cancer mortalities.) Yet local records

show that 3 out of the 4 brain cancer deaths reported in 1963-67 for this Cortlandt area of 22,000 were actually registered from the Montrose section I described in "The Montrose Catastrophe" - population, less than 500!

Unfortunately, the people who prepared the delusive State report made one false step: In making their report, they revealed local statistics not available to the general public or reported in "U. S. Vital Statistics" (because the communities involved are too small for individual mention). In other words, the report brought into the open statistics heretofore available only to the two Health Departments. These figures happen to be most significant.

The cancer deaths shown in the New York committee's statement (taken from Tables VII and Table VII A of the State "Review of N W Westchester County" cited above) though damning as evidence, would appear to be small in number. They will certainly be labeled as such and called "unimportant" by AEC and Con-Edison attorneys. But this is far from true, as any honest statistician knows. For:

- 1) By the State figures, Peekskill, Buchanan, and Croton-on-Hudson are now implicated in the Indian Point cancer problem. (What about other unnamed Westchester communities?)
- 2) In 11 out of 12 community situations named, an unbroken increase of cancer deaths is shown. In the 12th, Peekskill, the number of brain cancers remained the same in the two periods covered. Yet, even there, unreported 1968-71 figures may now have changed the picture.
- 3) If such an increase could occur with only the 265-megawatt Indian Point I reactor in operation what would result with the addition of the 873-meg. Reactor II 4 times as large as Indian Point I?
- 4) If such an increase could occur with only Indian Point I's Pressurized Water 265-meg, reactor, imagine the effect of adding, as planned, Reactors III, IV and V (of 1100-meg, each) all of Boiling Water type since airborne radioactive releases from this type of reactor are known to be enormously larger.. What will be the effect downwind then?

- Copyright 1971, Mary H. Weik -

#### CANCER DEATH RECORD IN "CORTLANDT TOWN" AREA SURROUNDING INDIAN POINT, NY, ATOMIC PLANT, BEFORE & AFTER PLANT'S START IN 1962

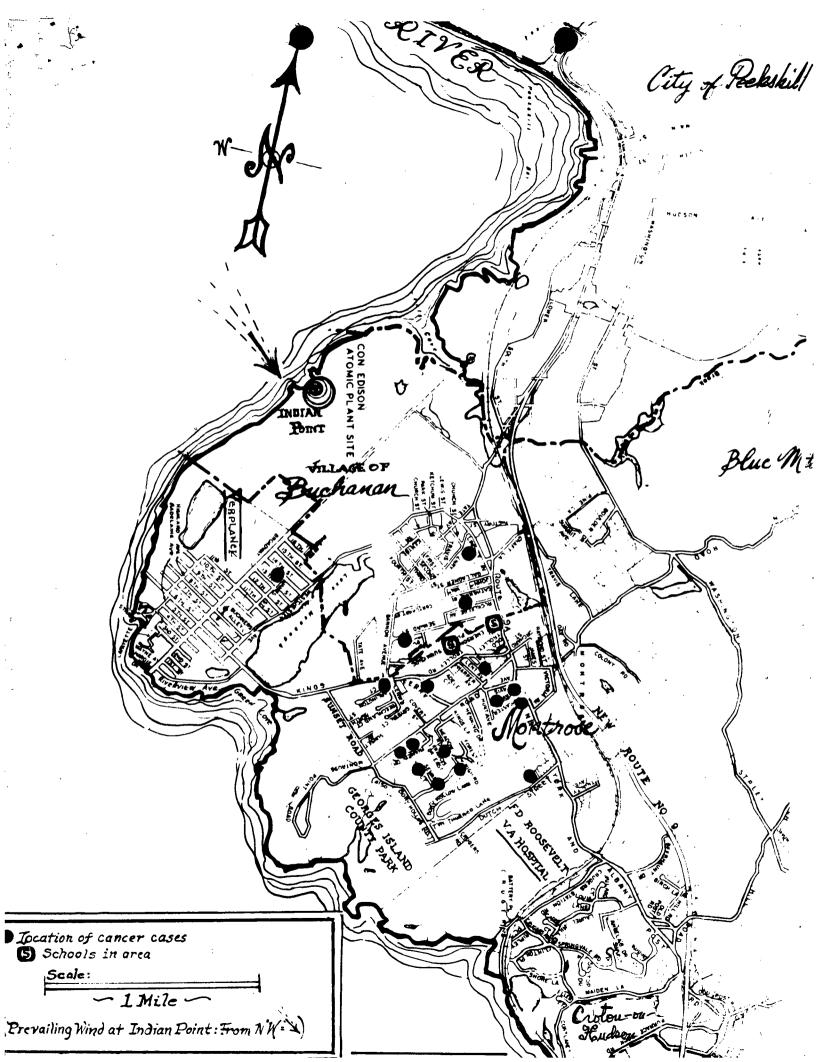
From Official Mortality Statistics in 1969 New York State Dept. of Health Publication, Review of Mortality Statistics in Northwestern Section of Westchester County - Tables VII&A: "Number of Deaths (Brain and Breast Cancers & Leukemia) for Cortlandt Town (Including) Peekskill City, 1957 - 1967" \*\*\*

Areas	CANCE and N		RAIN System (193)	BREAST CANCER WHO International Code 170			LEUKEMIA (International Code 204)			Population		
	57- '61	163-167	% Increase	' <i>5</i> 7- '61	163-167	% Increase	57- '61	163-167	% Increase	1960	1965	Increase
Peekskill	4	4		20	25	25 %	4	10	150 %	18,737	18,504	(1 drop)
Croton-on-Hudson	-	6	600 %	7	10	43 %	3	6	100 %	6,812	6,941	<u>Inc</u> : 2%
Buchanan	-	1	100 %		2	200 %	-	ı	100 %	2,019	2,168	" 7%
Rest of Cortlandt Town (including MONTROSE)	_	4 *	400 %	4	12	200 %	2	5	150 %	17,505	** 22,231	
TOTAL Cortlandt Town	4	15	275 %	31	49	58 %	9	22	144 %	45 <b>,</b> 0 <b>7</b> 3	49,844	" 11%

<sup>\*</sup> Three of these 4 deaths were recorded for a small section (c. 500 population) of MONTROSE directly downwind to the <u>Indian Point</u> atomic plant.

<sup>\*\*</sup> MONTROSE total population was only 2200 in 1970 (Rand McNally 1971 Commercial Atlas & Marketing Guide).

<sup>\*\*\*</sup> Conclusions issued by State and County Health Boards are in curious contradiction to their own records:
In spite of the increases shown in the N.Y.State Health Dept. figures reported above, State Health Commissioner HOLLIS S. INGRAHAM, in his presentation latter to the U.S.Atomic Energy Commission of March 23, 1970 accompanying the above report, said: "We find no evidence of an increase in . . cancer mortality in the vicinity of Indian Point;" and Dr. DONALD R. REED, President of the Westchester County Board of Health, in a March 18, 1970 letter answering a local citizen's inquiry, in which Dr. REED himself cited a rise in All Cancer Death figures in the 4 years after Indian Point's start (1963-1966) which, compared to the 4 years preceding its start (1958-1961), amounted to an increase of 22% in MONTROSE and an increase of 150% in BUCHANAN, wrote: "These figures would indicate to me that the cancer deaths have not increased in the villages of Buchanan or Montrose (!)."



# BILINGUAL Q U O T E S

FROM: Committee To End Radiological Hazards 166 Second Avenue, New York, NY 10003, USA Mary Hays Weik, Secretary (GR 7-5935)

## ATOMIC PLANT RELEASES CANNOT BE FAIRLY COMPARED TO NATURAL BACKGROUND RADIATION

### (English translation):

"A nuclear power plant releases radioactivity to its environment through its chimney and cooling-water. Even in undisturbed normal operation, the chimney emits radioactive gases and particulate matter which are distributed through the surroundings.

"Company 'experts' claim that the amount released is minimal. They calculate high plant releases by comparing them with natural background radiation. Actually, the effect of radioactive material taken into the body, as is that from the plant's chimney and cooling-water, through inhalation, or by way of the food chain and drinking-water, is significantly higher (than company figures show), and impossible to measure exactly.

"If a (radioactive) particle merely lies on the ground, then its effect is minimal although its radiation may be dangerously high. If the particle, however, is deposited on a mucous membrane by inhalation or ingestion, or if it settles in an organ due to its chemical nature, then as a result of contact radiation, its effect will be increased to the square of its ownvalue and give an extraordinarily strong dose of radiation to its direct surroundings, leading to death of the cells contacted or severe damage to those it touches.

"Especially effective in this connection are Alpha and Beta rays, whose effect would otherwise be screened out by the atmosphere. These inner effects cannot be controlled from without. Thus numbers of Cancers and other damages can arise; above all, genetic damage and disease if the reproductive organs are affected. Moreover, this radioactive matter stored up in the body increases with time, and the damages build up . . "

(From Ber Skandal Atomkraftwerk by Ing. KARL NOWAK, Vienna physicist and editor of "Neue Physik", in an article in "Oberdsterreich. Wochenpost," Austria)

# (Original German):

mEin Kernkraftwerk gibt über Schornstein und Kühlwasser Radioaktivität an die Umgebung ab. Der Schornstein auch im ungestörten Normalbetrieb laufend radioaktive Gase und Schwebstoffe ausstöszt und in der Umgebung verteilt.

Won den bezahlten Experten' wird es so dargestellt, als sei das minimal. Man rechnet mit der erhöhten Umgebungsstrahlung und vergleicht sie mit der natürlichen Strahlenbelastung. Tatsächlich ist die Wirkung inkorporierter radioaktiver Stoffe, wie solche aus Schornstein und Kühlwasser über Atomluft, Nahrungskette und Trinkwasser in den Körper gelangen, ganz bedeutend höher und nicht exakt messbar.

"Hiegt ein Staubkörnchen am Boden, so ist seine Wirkung minimal, mag es auch ein gefährlicher starker Strahler sein. Gelangt das Teilchen aber mit Atomluft oder Nahrung auf eine Schleimhaut oder wird es gar infolge seiner chemischen Beschaffenheit in ein Organ eingelagert so kann es infolge Kontaktbestrahlung, da die Wirkung mit dem abnehmenden Abstand quadratisch zunimmt, an seine unmittelbare Umgebung auszerordentlich starke Strahlungsdosen abgeben und so sogar zu Nekrose (Zelltod) oder schweren Zellschäden Anlasz geben.

Besonders wirksam sind dabei Alpha- und Betastrahler, deren Wirkung sonst durch die Luft abgeschirmt wird. Diese inneren Vorgänge sind von auszen überhaupt nicht kontrollierbar. So künnen Krebsherde und andere Schädigungen entstehen, vor allem auch Erbschäden und Erbkrankheiten, soweit die Fortpflanzungsorgane beeinfluszt werden. Auch speichern sich radioaktive Stoffe im Kürper und die Schädigungen summieren sich . "

30

To the six six for solid, it had not not consider a given to the first had been not been something in the solid for the first had not consider a first the solid to the

The second secon

그 생생이 되었습니다. 집에면 보스닷컴, 인텔 내 변화. State of the second second

្រុមស្រួន នៅក្នុងស្ថិត ខេត្តប្រជាទេ បានស្ថិត បានប្រជាទេ បានប្រជាទេស នៅប្រជាទេស នេះ ប្រាក់ប្រជាទេ បានប្រើប្រជាទ សេវីស សេវីស សេវីស ស្រួន ប្រើប្រាក់ប្រជាទេស សេវីស ស្រួន សេវីស សេវីស សេវីស សេវីស សេវីស សេវីស សេវីស សេវីស សេវីស ស សេវីស សេវីស ស្រ្តីស្រែស សេវីស សេវីស សេវីស ស្រួន ស្រែស្រែស សេវីស សេវីស សេវីស សេវីស សេវីស សេវីស សេវីស សេវីស សេវី

្រុសស្រាស់ ស្រីសេខស្នា សាល់ស្រាស់ សម្រេចស្រាស់ ប្រសាធានជាប្រស់ សេចបំណុំ ប្រធានការប្រជាធិប្បធានប្រជាជាក្រុមប្រ ១០៩៣ ក្រុម្បី ប្រជាធិប្បធានការប្រជាធិប្បធានប្រជាធិប្បធានការប្រជាធិប្បធានប្រជាធិប្បធានប្រជាធិប្បធានប្រជាធិប្បធ ស្រីសេចក្រុសស្រីសេខសេចក្រុសស្រី ស្រី ស្រី ស្រីសេសស្រី សេចសេចក្រុសស្រីសេខសេចក្រុសស្រីសេសស្រីសេសស្រីសេសស្រីសេស ស្រីសេចក្រុសស្រីសេសស្រីសេសស្រីសេសស្រីសេសស្រីសេសស្រីសេសស្រីសេសស្រីសេសស្រីសេសសុសសេសស្រីសេសសុសសេសស្រីសេសសុសស្រីសេស ស្រីសេសស្រីសេសស្រីសេសស្រីសេសស្រីសេសស្រីសេសស្រីសេសស្រីសេសស្រីសេសសេសសេសសេសសែសសុសសែសស្រីសេសសុសសេសស្រីសេសសុសសេសស

, the order of best of the

ం కారు ఎందిను ఈశార్వి ఇద్దలు దూరిని ఎక్కువనిని అనినికి అందు అంటా కారు కోరు ముందినుకోని కోడుకుండిని అక్కువనినికి ఎక్కుడు నైట్ నినిపిలోని అడ్డాన్ కృత్వా ఎక్కువనినికి ఇన్ కార్ కింటింగు ఉంది. అయితే కారికి అందిన అ అన్నారుకుల్లోనే ఎక్కువని కార్డ్ ఆట్ట్ ఎక్కువనినికి మూలం ముందినికి మీట్ నే అందినికి అందుకోత్తినికి ముందినికి ముంది అమ్మికి అన్నారు అన్ని ఎక్కువనినికి అయి మన్నారుకులు ముందినికి మీట్ నినిపి సంగారమే నేకి కారుకులు అయితే కార్డ్ ఎక్కువనినికి అనినిస్తున్నారుకులోని మన్నారుకులు మంది ఈ ముందినికి సంగారమే నేకికి సంగార్ధుతోంది.

nestern fra kontroller engligte (langing nestaanest en nestern et findert en nestablik De flaanse oorgegeer kinne gragiene verstaar en se kontroller kan blike finder te

is for the contract the second field

A large 1 of the control of the cont en en en en la composition de la colonia La granda grafia la colonia de la figura di subformativa de la colonia de la filosofia de la filosofia de la c 7...

the contraction of the contract

and the grade of the control of the first of the state of the grade of the control of the state of the first of the control of and the state of the state of

్రము ఉంది. మండి రాజు గ్రామం మండుకు ఇంటిముగ్రాముకుండి అంది. మార్డుకు కూడా ముందుకుండి ముందికు కూడా కుండికు which will be the register with the high substitutes and the water of the property and the property of the first างอักษาครั้ง โดยต่องเมื่อ ก็แล้ว . . โดยไฮโดด วาม และได้เหลือ โดยสำลัก โดยสำลักให้ เคยเลื่องสั้น ครั้ง และได้เ ให้เครื่องครั้งและ และก็จักคายสงเลนา์ เกี่ยง โดยถูกรวงผู้เหลาะ โดยโดย และได้และเกลา และเกมเล้า และเกิดสำลักษา แต the state will be desired to the beauty of the state of t