

A/C Pipe & Health Bulletin



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PLAINTIFF'S EXHIBIT

CT-275


FROM: Roman P. Korobij

SUBJECT: A/C PIPE AND DRINKING WATER
AUDIO/VISUAL PACKAGE

The above A/V Package, of which you are all familiar, is totally self-contained except for a verbal introduction by the "presenter." To provide a bit of guidance to the "presenter" attached is a script which has proven to be effective.

The "presenter" is of course under no obligation to use this exact script. In some cases, the "presenter" may even decide to forego an introduction, let the A/V Package stand on its own merits, and then simply answer any questions the viewers may have.

CTD032359

ASBESTOS AND HEALTH AUDIO/VISUAL PRESENTATION
SAMPLE PRE-PRESENTATION SCRIPT - 3 MINUTES

Economy, efficiency, long trouble free life -- There isn't another pipe product on the market that can surpass the fifty year record of performance of Asbestos-Cement pipe. It does the job!

The bitumen coating on ductile pipe -- plastic pipe - galvanized pipe - asbestos-cement pipe -- (long pause) polynuclear aromatic hydrocarbons -- vinyl chloride monomers -- the heavy metals -- asbestos -- all are known or suspected substances that may be health hazards -- depending on dosage levels.

Ladies and gentlemen, there we have it. Just about all the pipe materials known and used to convey potable water contain substances considered possible health hazards.

It is not my intent to cause concern or scare anyone present. The same charge can be made about your attending this meeting, walking from your car to this building. We all know the sun's rays contain many radiation bands that are definite health hazards, provided the dosage level is high enough. Then again, in today's world of why walk when you can ride, the risk of being hit by an automobile as you walk from your car to this meeting is not zero.

The presentation you are going to see today will be covering just such matters. Dose - response - risk putting matters into proper prospective.

Now if you take all the substances you touch, smell, swallow - all the substances that are suspected or proven health hazards - list them on these walls in alphabetical order - it's a very long list and what do you find almost at the top of the list?
A-Asbestos.

I'm not claiming that because asbestos starts with A that it's received more attention than all these other substances, but I do say that asbestos has been subjected to more scrutiny - more in-depth study - than 90% of the other substances on this list. I say the in-depth study of asbestos is good! We know more about it. At the same time it's bad if we choose to misconstrue or reach unfounded conclusions.

The inhalation of asbestos fibers, rather high dosage levels in job related circumstances, causes a lung disease called asbestosis. The disease is similiar to silicosis found in quarry workers, black lung found in coal miners, brown lung, now receiving more attention, among textile workers. In addition, starting in the early '60's asbestos fiber inhalation was first linked with cancer.

CTD032360

ASBESTOS AND HEALTH AUDIO/VISUAL PRESENTATION
SAMPLE PRE-PRESENTATION SCRIPT - 3 MINUTES

If inhaling asbestos fibers can be linked to cancer, can ingesting asbestos fibers in drinking water be linked to cancer? When I said few substances have been scrutinized or studied more than asbestos, a major portion of these studies has been conducted to answer this question. Results to date?? There is no evidence that a recognized health hazard exists!

But let this audio/visual presentation produced by the A/C Pipe Producers Association give you the facts. I think you will find it very interesting. Following the presentation, which last about 25 minutes, I'll be glad to try to answer any questions you may have.

CTD032361

"A/C PIPE AND HEALTH"
SLIDE - KEYED SCRIPT

CTD032362

THE WORLD HAS NEVER BEEN . . . AND NEVER
WILL BE FREE FROM RISK. ⁰⁵ IT IS INESCAPABLE.
IT IS LIFE ITSELF ⁰⁶ . . . AND SINCE THE DAWN
OF TIME ⁰⁷ . . . MAN HAS ACCEPTED RISK AS A
NORMAL PART OF HIS DAILY ACTIVITY. ⁰⁸

THE PERCEPTION OF RISK VARIES . . . FROM
SITUATION TO SITUATION . . . FROM
INDIVIDUAL TO INDIVIDUAL. WHAT ONE PERSON
CONSIDERS "SAFE" ^{A04} . . . ANOTHER MAY PERCEIVE
AS DOWNRIGHT FOOLISH . . . ILLUSTRATING
THAT PERCEPTION OF RISK IS SUBJECTIVE . . .
EMOTIONAL . . . AND MAY HAVE LITTLE BASIS
IN FACT.

ALL RISKS HAVE ONE THING IN COMMON . . .
THEY CAN BE MEASURED. THERE IS A NAME
FOR THIS MEASUREMENT ⁰⁹ . . . "PROBABILITY".
SOMETHING IS JUDGED "SAFE" IF ITS PROBABILITY
OF RISK IS "ACCEPTABLE". HOWEVER, "SAFE"
DOES NOT MEAN "FREE FROM RISK". ^{A05} A SEEMINGLY
"SAFE" SIX MINUTE CANOE RIDE, FOR EXAMPLE,
CARRIES THE SAME RISK OF DEATH AS A FIVE-
HUNDRED MILE PER HOUR COMMUTER FLIGHT FROM
WASHINGTON TO NEW YORK CITY ¹⁰ . . . TRAVELING
BY AUTOMOBILE . . . THE RISK INCREASES
FIVE-FOLD. ¹¹

NOTHING IS "ABSOLUTELY" FREE FROM RISK . . .
SO NOTHING CAN BE "ABSOLUTELY" SAFE.
BUT LIKE ELECTRICITY AND YOUR AUTOMOBILE,
THERE ARE NON-HARMFUL WAYS TO USE
POTENTIALLY HARMFUL THINGS . . . IT'S
SIMPLY A MATTER OF PROBABILITIES.^{A08}

FEW RISKS ARE AS WELL-PUBLICIZED AND
FRIGHTENING, AS THE RISK OF CANCER.
WHILE THE FEAR OF CANCER MAY ALTER OUR
PERCEPTION OF RISK . . . IT CANNOT . . .
DOES NOT . . . ALTER THE PROBABILITY
OF RISK.¹²

CANCER . . . AN UNRESTRAINED GROWTH OF
CELLS . . . IS NOT A SINGLE DISEASE . . .
BUT MANY DISEASES CAUSED BY AGENTS
CALLED "CARCINOGENS".^{A07} ASBESTOS IS A
CARCINOGEN . . . IT IS NOT ALONE.
OVER 300 CHEMICALS . . . MANY KNOWN OR
POTENTIAL CARCINOGENS.^{A08} HAVE BEEN
IDENTIFIED IN DRINKING WATER ALONE . . .
A FACT WHICH HAS PROMPTED A CLOSE¹⁴
EXAMINATION OF ALL COMMON PIPE MATERIALS
SINCE MOST CONTAIN POTENTIALLY TOXIC
MATERIALS.^{A09}

THE CRITICAL QUESTION WITH ANY TOXIC MATERIAL IS . . . AT WHAT EXPOSURE LEVEL IS IT HAZARDOUS? MEDICAL SCIENCE DETERMINES THIS BY A PRINCIPLE KNOWN AS¹⁵ "DOSE-RESPONSE". THE PRINCIPLE IS RATHER STRAIGHT-FORWARD. FOR EVERY "DOSE" . . . THERE IS A PROPORTIONATE BIOLOGICAL "RESPONSE". NOW LET'S ADD ANOTHER WRINKLE . . . THERE IS A DOSE SMALL ENOUGH WHICH WILL RESULT IN NO MEASURABLE¹⁶ RESPONSE. THIS LEVEL IS CALLED A¹⁶ "THRESHOLD". THRESHOLD EFFECTS ARE COMMON. WE HAVE THRESHOLDS FOR HEARING, PAIN, HEAT . . . EVEN MARTINIS.^{A10}

WHETHER OR NOT, WE HAVE A THEORETICAL OR PRACTICAL THRESHOLD FOR CARCINOGENS IS A VERY CONTROVERSIAL QUESTION. THE ANSWER IS AS PHILOSOPHICAL AS IT IS SCIENTIFIC.^{A11} LIKE THE PERCEPTION OF RISK . . . OPPOSING MEDICAL OPINION SIMPLY REFLECTS DIFFERENT VALUE JUDGMENTS ON WHAT CONSTITUTES AN ACCEPTABLE RISK MEASURED BY REAL WORLD^{A12} DOSES . . . AND PROBABILITIES.

EVERYTHING KNOWN ABOUT ASBESTOS INDICATES IT
OBSERVES THE RULES OF "DOSE-RESPONSE" .
THEREFORE, A "PRACTICAL" THRESHOLD . . . OR
"SAFE" LEVEL OF EXPOSURE. . . MUST EXIST.
IF IT DID NOT . . . IT WOULD BE DIFFICULT
TO RECONCILE THE ¹⁷PREVALENCE OF ASBESTOS
IN THE ENVIRONMENT WITH THE ABSENCE OF
RELATED DISEASE IN THE GENERAL POPULATION. ^{A13}

ASBESTOS IS FOUND THROUGHOUT THE WORLD.
470 MILLION YEARS AGO . . . HOT,
SUBTERRANEAN WATER ¹⁹DISSOLVED ROCK LAYERS
CONTAINING IRON, MAGNESIUM AND SILICA,
FORMING "VEINS" OF LIQUID MINERALS . . .
AS THE EARTH COOLED ^{A14} . . . THESE MINERALS
CRYSTALLIZED INTO THE FIBROUS ORE ^{A15} KNOWN
TODAY AS ASBESTOS. ^{A16}

PHAROAHS AND ANCIENT KINGS USED THIS UNIQUE
PRODUCT OF NATURE. TODAY, YOU DON'T HAVE
TO BE ROYALTY TO USE ASBESTOS . . . PRACTICALLY
EVERYONE DOES. OVER 3,000 PRODUCTS USE IT . . .
USUALLY IN COMBINATION WITH OTHER MATERIALS. ²¹
WITH PROPERTIES UNMATCHED BY ANY OTHER NATURAL
OR MAN-MADE MATERIAL ^{A17} . . . ASBESTOS IS
IRREPLACEABLE FOR THE MICRO-REINFORCEMENT OF
HIGH PERFORMANCE PRODUCTS LIKE ASBESTOS-CEMENT
PIPE. ^{A18}

COMPRISING LESS THAN 20 PERCENT OF A/C PIPE
. . . THESE INCREDIBLY STRONG FIBERS ARE
NOT FREE . . . BUT LIKE REINFORCING RODS
IN CONCRETE . . . THEY ARE BOUND ^{A19} . . .
ENCAPSULATED . . . LOCKED-IN . . . THE
CEMENT BINDER. ^{A20} THE DISTINCTION BETWEEN
"FREE" AND "BOUND" ASBESTOS IS EXTREMELY
IMPORTANT. WHY? . . . IT DETERMINES THE
PROBABILITY OF FIBER RELEASE . . . AND
IN TURN . . . THE PROBABILITY OF EXPOSURE.
MORE IMPORTANTLY ^{A21} . . . IT EXPLAINS WHY
A/C PIPE IS A NON-HARMFUL USE OF ASBESTOS. ²⁴

THE ABILITY OF ASBESTOS TO SUBDIVIDE INTO
MICROSCOPICALLY SMALL FIBERS IS THE KEY
TO ITS BIOLOGICAL AVAILABILITY . . . ITS
ABILITY TO BECOME AIR OR WATERBORNE AND ²⁵
THEREBY INHALED OR INGESTED. THE BIOLOGICAL
EFFECTS OF ASBESTOS DEPEND ON DOSE AND
ROUTE OF ENTRY INTO THE BODY . . . AND ARE
BELIEVED TO BE A FUNCTION OF FIBER SHAPE ^{A22}
AND SIZE . . . RATHER THAN CHEMICAL
COMPOSITION. GENERALLY . . . THE LONGER
AND THINNER THE FIBER . . . THE GREATER THE
POTENTIAL HEALTH RISK.

PROLONGED OR HEAVY EXPOSURE TO AIRBORNE
ASBESTOS^{A23} CAN LEAD TO ASBESTOSIS . . . A
DISEASE WHICH IMPAIRS BREATHING; IN THE
CASE-OF SMOKERS, HIGH RISK OF LUNG CANCER;^{A24}
AND FINALLY, TO A MUCH LESSER DEGREE,^{A25}
MESOTHELIOMA . . . A RARE CANCER OF THE
CHEST OR ABDOMINAL CAVITY.^{A26} TO DATE, ALL
IDENTIFIED OCCURRENCES OF THESE DISEASES
ATTRIBUTED TO ASBESTOS, HAVE INVOLVED
EXPOSURES IN . . . OR RELATED TO . . .
OCCUPATIONAL SETTINGS.

IN CONTRAST TO INHALATION,^{A27} A CLEAR CAUSE
AND EFFECT" RELATIONSHIP BETWEEN INGESTED
ASBESTOS AND GASTROINTESTINAL OR GI CANCER
DOES NOT EXIST.^{A28} EVERYTHING FROM MICE TO
BABOONS HAS BEEN WATERED, FORCE-FED OR
DINED AT WILL ON ASBESTOS . . . AS MUCH
AS 6 PERCENT OF THEIR FOOD INTAKE.⁶⁵ RESULT?
NO CANCERS.

THESE THEN ARE THE RISKS FOR EXPOSURE TO
ASBESTOS²⁸ . . . "HIGH" FOR HEAVY OR PROLONGED
INHALATION EXPOSURE . . . SOLELY "PRESUMPTIVE",
WITH NO PROVEN RISK FOR INGESTION.^{A29}

REGULATORY AGENCIES SET EXPOSURE LEVELS TO AIRBORNE ASBESTOS BASED ON THE NUMBER OF FIBERS LONGER THAN 5 MICROMETERS.^{A30} PROPOSALS TO LOWER EXISTING LEVELS ARE UNDER CONSIDERATION.^{A31}

LET'S COMPARE EXISTING AND PROPOSED STANDARDS TO FIBER LEVELS MEASURED WHEN CUTTING OR MACHINING A/C PIPE. INDEPENDENT INDUSTRIAL HYGIENE STUDIES SHOW³² . . . WHEN RECOMMENDED WORK PRACTICES ARE FOLLOWED . . . FIBER LEVELS ARE NOT ONLY FAR BELOW THE PRESENT STANDARD . . . BUT WOULD ALSO MEET THE PROPOSED STANDARD. THIS SHOULD COME AS NO SURPRISE. REMEMBER . . . THE ASBESTOS³³ IS "LOCKED-IN" THE CEMENT BINDER. THE INFREQUENCY AND SHORT DURATION OF FIELD OPERATIONS FURTHER REDUCE EVEN THESE EXPOSURES. CONCLUSION³⁴ . . . WHEN RECOMMENDED WORK PRACTICES ARE FOLLOWED. . . THE RISK OF WORKING WITH A/C PIPE IS ALMOST³⁵ NON-EXISTENT.

WHAT ABOUT WATERBORNE ASBESTOS. WELL . . . LET'S LET THE FACTS SPEAK FOR THEMSELVES.^{A32}

THE PREVALENCE OF ASBESTOS IN SOIL RESULTS IN ITS PRESENCE IN MOST LAKE, RIVER AND WELL WATERS . . . AND IN MANY DISTRIBUTION SYSTEMS . . . REGARDLESS OF THE TYPE PIPE UTILIZED. SURVEYS BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY SHOWED THAT NATURAL AND TREATED WATERS ^{A33} IN MONTANA, WASHINGTON, PENNSYLVANIA, CALIFORNIA, MASSACHUSETTS AND GEORGIA HAD LEVELS IN THE RANGE OF MILLIONS OF FIBERS PER LITER. ^{A34} THERE IS ASBESTOS IN ALL SURFACE WATERS OF ALL HABITED AREAS OF ONTARIO, AND MANY PARTS OF QUEBEC AND BRITISH COLUMBIA. ^{A35} NATURAL WEATHERING AND EROSION HAVE IN THE PAST, AND WILL . . . FOR GENERATIONS TO COME . . . RELEASE ASBESTOS TO SURFACE WATERSHEDS AND UNDERGROUND AQUIFERS AROUND THE WORLD. ³⁹

ANOTHER POTENTIAL SOURCE OF WATERBORNE ASBESTOS CAN BE ASBESTOS-BEARING SOIL DEPOSITED IN THE PIPE DURING INSTALLATION OR REPAIR. THIS CAN OCCUR WHETHER THE PIPE IS IRON, PLASTIC OR ASBESTOS-CEMENT. A THOROUGH FLUSHING EASILY ELIMINATES SUCH SOIL CONTAMINATION.

TAPPING A/C PIPE TO PROVIDE HOUSE CONNECTIONS
ALSO CAN CONTRIBUTE ASBESTOS TO DRINKING
WATER.⁴⁰ WHEN WET TAPPING UNDER PRESSURE,
EQUIPMENT WITH A POSITIVE PURGE SHOULD BE
USED. THIS EJECTS 99 PERCENT OF THE
ASBESTOS-CEMENT CHIPS AND DOWNSTREAM FLUSHING
TAKES CARE OF THE REST.⁴³⁶ AN ALTERNATIVE . . .
HEAVY-WALLED TAPPED COUPLINGS SUPPLIED
DIRECTLY FROM THE FACTORY.⁴¹

NOW THE CRITICAL QUESTION . . . DOES A/C
PIPE CONTRIBUTE ASBESTOS TO DRINKING WATER
CONVEYED THROUGH IT? THE ANSWER IS NOT A
SIMPLE ONE . . . BUT WE DO KNOW THIS . . .
IT DEPENDS ON THE WATER. AS LONG AS THE
CEMENT BINDER REMAINS INTACT, THE RELEASE⁴² . . .
IF ANY . . . OF THE "LOCKED-IN" FIBER IS
INFINITESIMAL.⁴³ HOWEVER, CERTAIN CORROSIVE OR
"AGGRESSIVE" WATERS WILL ATTACK EVEN CORROSION-
RESISTANT ASBESTOS-CEMENT. THE MOST COMMON
ARE LOW HARDNESS OR "SOFT" WATERS . . . AND
LOW PH OR "ACIDIC" WATERS. AGGRESSIVE WATERS⁴³⁷
ARE "HUNGRY" WATERS . . . NOT ONLY HUNGRY FOR
CALCIUM AND MAGNESIUM IN CEMENT . . . BUT
HUNGRY FOR IRON, LEAD, COPPER, ZINC, AND CADMIUM
IN METALLIC PIPE . . . ORGANIC RESIDUALS IN
PLASTIC PIPE . . . POLYAROMATIC HYDROCARBONS⁴⁴
IN ORGANIC COATINGS . . . AND ON AND ON.

CORROSIVE WATERS TAKE A STAGGERING ECONOMIC
TOLL FROM THE WATERWORKS INDUSTRY EVERY
YEAR . . . BUT THE HEAVIEST TOLL OF ALL MAY⁴⁵
BE THE TOLL IN HUMAN LIVES. MORE THAN FIFTY
STUDIES IN NINE COUNTRIES REVEAL A CONSISTENTLY
SIGNIFICANT RELATIONSHIP BETWEEN WATER HARDNESS
AND CARDIOVASCULAR DISEASE . . . STILL THE
UNITED STATES' NUMBER ONE KILLER. IN ONE
STUDY, CITIES WITH THE SOFTEST WATER HAD^{A38}
TWICE THE DEATH RATE FROM CORONARY DISEASE
AS CITIES WHERE THE WATER WAS HARDEST.
ECONOMICS ALONE ARGUE STRONGLY FOR TREATMENT^{A39}
OF CORROSIVE WATERS . . . THE POTENTIAL LOSS
OF LIFE PUNCTUATES THE URGENCY.

THE A/C PIPE INDUSTRY IS NOT THE FIRST TO
SPOTLIGHT THE NEED FOR STABILIZATION, BUT
IT HAS BEEN A LEADER IN TAKING POSITIVE^{A40}
STEPS TO INCLUDE AGGRESSIVE WATER GUIDELINES
IN NATIONAL PRODUCT SPECIFICATIONS. THESE
GUIDELINES DO NOT RECOMMEND THE USE OF
ASBESTOS-CEMENT PIPE WITH HIGHLY AGGRESSIVE^{A41}
WATERS. CTD032372

IN "MODERATELY" AND "NON-AGGRESSIVE" WATERS,
FIELD MEASUREMENTS CONFIRM EPA LABORATORY
RESULTS THAT A/C PIPE DOES NOT CONTRIBUTE
SIGNIFICANT . . . OR IN MANY CASES . . .
EVEN MEASURABLE AMOUNTS OF ASBESTOS TO
DRINKING WATER CONVEYED THROUGH IT.

48
NORTHEAST ILLINOIS . . . AN ANALYSIS OF
FIFTEEN PUBLIC WATER SYSTEMS CONTAINING
A/C PIPE OF VARIOUS AGES, LENGTHS AND
DIAMETERS . . . CONCLUSION . . . NO
SIGNIFICANT RELEASE OF ASBESTOS FROM
A/C PIPE.

A42
CALIFORNIA . . . AN ANALYSIS OF WATER FROM
A DISTRIBUTION SYSTEM WITH NEARLY ONE THOUSAND
MILES OF A/C PIPE . . . CONCLUSION . . .
ASBESTOS LEVELS BELOW DETECTABLE LIMITS.

50
NEW MEXICO . . . AN ANALYSIS OF ASBESTOS
FIBER CONCENTRATIONS IN WATER SYSTEMS CONTAINING
FIVE HUNDRED FORTY EIGHT MILES OF A/C PIPE . . .
CONCLUSION . . . NO EVIDENCE OF ASBESTOS
PICK-UP FROM A/C PIPE.

A43
TEXAS, OHIO AND CONNECTICUT . . . EPA
STUDIES OF A/C PIPE SYSTEMS . . .
CONCLUSION . . . FIBER LEVELS "NOT
STATISTICALLY SIGNIFICANT" OR "BELOW
DETECTABLE LIMITS." CTD032373

52
COMMON SENSE TELLS US THAT "REAL WORLD"
RISK MUST RELATE TO "REAL WORLD" EXPOSURE.
THAT'S WHY THESE RESULTS ARE SO IMPORTANT . . .
THEY MEASURE ACTUAL ASBESTOS LEVELS IN A/C
PIPE SYSTEMS. 53
CLEARLY, THE AMOUNT OF ASBESTOS
. . . IF ANY . . . CONTRIBUTED TO DRINKING
WATER SUPPLIED THROUGH A/C PIPE WAS INFINITESIMAL.

^{A44} NOW, WHAT ABOUT WATER SYSTEMS WHICH HAVE
MEASURABLE QUANTITIES OF ASBESTOS FIBER . . .
WHAT'S THE RISK OF CONTRACTING CANCER? ^{A45}
THERE IS NO EVIDENCE THAT ANYONE IN THE
GENERAL PUBLIC HAS EVER CONTRACTED ANY
DISEASE FROM NATURALLY-OCCURRING ASBESTOS ^{A46} . . .
OR THE MINUTE AMOUNTS OF FIBER RELEASED FROM
A/C PIPE. THIS IS NOT A JUDGMENT OF SAFETY
. . . IT IS A STATEMENT OF FACT. ^{A47}

IN 1978, UNIVERSITY OF CALIFORNIA RESEARCHERS
REPORTED A STATISTICAL ASSOCIATION BETWEEN
CERTAIN CANCERS AND WATER SUPPLIES HIGH IN
NATURALLY-OCCURRING ASBESTOS. WHILE THE
STUDY STIRRED UP A STORM OF QUESTIONS ^{A48} . . .
IT DID NOT PINPOINT A CAUSE AND EFFECT
RELATIONSHIP BETWEEN INGESTED ASBESTOS AND
CANCER. AS THE RESEARCHERS NOTED . . .
IMPORTANT FACTORS, SUCH AS SMOKING, ALCOHOL,
AND DIETARY HABITS . . . NOT TO MENTION
OCCUPATIONAL HISTORY AND POPULATION
MOBILITY . . . WERE NOT INCLUDED IN THE
STUDY. THE CALIFORNIA DEPARTMENT OF HEALTH
SERVICES UNEQUIVOCALLY STATED ^{A49} . . . THE
REPORT DOES NOT ESTABLISH ANY CAUSAL LINK
BETWEEN ASBESTOS AND BAY AREA DRINKING WATER
. . . A POSITION ALSO TAKEN BY THE U. S.
ENVIRONMENTAL PROTECTION AGENCY.

⁵⁶ WHETHER IT'S THE EXTREMELY SMALL FIBER SIZE OR THE SUB-THRESHOLD "DOSE" . . . IF THERE IS A "CAUSE AND EFFECT" RELATIONSHIP BETWEEN GI CANCERS, INGESTED ASBESTOS OR THE USE OF A/C PIPE ⁵⁷ . . . IT DOES NOT SHOW IN STATE, NATIONAL OR WORLD CANCER STATISTICS.

⁵⁸ DULUTH, MINNESOTA . . . MILLIONS OF ASBESTOS-LIKE FIBERS IN ITS DRINKING WATER SUPPLY, AND MINNEAPOLIS-ST. PAUL, WITH NONE. A COMPARISON SHOWED NO STATISTICAL DIFFERENCE IN THE INCIDENCE OF GASTROINTESTINAL CANCER.

^{A50} CONNECTICUT . . . AN EXTENSIVE ENVIRONMENTAL PROTECTION AGENCY STUDY SHOWED NO CORRELATION BETWEEN THE INCIDENCE OF GI CANCER AND THE USE OF ASBESTOS-CEMENT WATER PIPE.

^{A51} THE UNITED STATES . . . DURING FIFTY YEARS RAPIDLY INCREASING A/C PIPE USAGE, GASTRO-INTESTINAL CANCER RATES FOR THE PERIOD 1949-1976 DECLINED THIRTY-NINE PERCENT.

^{A52} CANADA . . . A STUDY OF TWENTY-TWO MUNICIPALITIES WITH HIGH CONCENTRATIONS OF NATURALLY-OCCURRING ASBESTOS IN THE WATER SUPPLIES FAILED TO REVEAL ANY EXCESS CANCER MORTALITY.

^{A53} SWITZERLAND . . . THE HIGHEST PER CAPITA USE
OF A/C PIPE IN WESTERN EUROPE. FROM 1951,
MORE THAN TWENTY YEARS AFTER A/C PIPE WAS
INTRODUCED . . . TO 1976, THE DEATH RATE
FROM GI CANCER DROPPED A SIGNIFICANT
THIRTY-TWO PERCENT.

⁶⁴ THIS INABILITY TO RELATE A "REAL WORLD"
RESPONSE WITH A "REAL WORLD" DOSE AGAIN
SAYS THAT LIKE THE AMOUNT OF ASBESTOS
CONTRIBUTED TO DRINKING WATER BY A/C PIPE,
THE RISK FROM INGESTING THAT ASBESTOS
MUST BE INFINITELY SMALL. HOW SMALL?
LET'S TRY TO PUT IT IN PERSPECTIVE. ^{A54}

IMAGINE A MAN . . . AND A MOUSE. ZERO POINT
TWO SEVEN PERCENT OF THEIR DIET WILL BE ASBESTOS.
NOT VERY MUCH. ^{A55} . . . BUT FOR THE MOUSE . . . A
MAGNIFIED DOSE . . . A DOSE WHICH IN AN ACTUAL
EXPERIMENT FAILED TO ESTABLISH A CANCER RISK. ^{A56}
FOR THE MAN . . . IT AMOUNTS TO ABOUT FIVE POUNDS
OF ASBESTOS . . . ROUGHLY THE AMOUNT OF BUTTER
HE EATS IN A YEAR. USING THE HIGHEST FIBER
LEVELS FOUND IN DRINKING WATER, THE MAN
^{A57} WOULD HAVE TO DRINK THREE POINT EIGHT MILLION
QUARTS OF WATER PER DAY TO CONSUME FIVE POUNDS
OF ASBESTOS IN A YEAR . . . OR OVER FIFTY
THOUSAND QUARTS PER DAY FOR A LIFETIME.

^{A58} THIS IS PREPOSTEROUS . . . BUT IT DOES PLACE
IN PERSPECTIVE THE PROBABILITY OF RISK FROM
A "REAL WORLD" DOSE OF INGESTED ASBESTOS
FROM A/C PIPE. . . A DOSE WHICH IS NOT
UNCOMMONLY A BILLION TIMES LESS THAN ASBESTOS
LEVELS PROVEN TO BE NONCARCINOGENIC IN
ANIMAL FEEDING STUDIES.

⁶⁷ ONE IN A BILLION . . . THAT FIGURE PROBABLY
DOESN'T REGISTER WITH MOST PEOPLE. IN TERMS
OF VOLUME . . . IT'S A VERY, VERY, VERY DRY
MARTINI . . . ONE DROP OF VERMOUTH IN FIFTEEN
THOUSAND, SEVEN HUNDRED FIFTY GALLONS OF GIN.
IN TERMS OF RISK . . . IT'S A THOUSAND TIMES
SAFER THAN SMOKING ONE AND ONE HALF CIGARETTES
OR DRINKING A HALF BOTTLE OF YOUR FAVORITE
WINE.

⁶⁸ IN SPITE OF PERCEPTIONS AND PUBLICITY TO THE
CONTRARY, THESE INCREDIBLY LOW PROBABILITIES
OF RISK TELL US THAT A/C PIPE IS NOT A RISK
TO THE PUBLIC . . . A JUDGMENT CONFIRMED
AGAIN AND AGAIN BY SOME OF THE MOST RESPECTED
AUTHORITIES IN THE WORLD.

^{A59} DR. IRVING J. SELIKOFF . . . "INSOFAR AS
ASBESTOS CEMENT PIPE FOR PUBLIC WATER SUPPLIES
IS CONCERNED . . . WE HAVE NO DATA DEMONSTRATING
HAZARD."

CTD032377

⁷¹
NATIONAL CANCER INSTITUTE . . . "NCI
SCIENTISTS . . . HAVE FOUND NO UNUSUAL
CANCER MORTALITY PATTERNS SO FAR AMONG
PERSONS RESIDING WHERE DRINKING WATER IS
CONTAMINATED BY ASBESTOS . . ."

⁷²
SELECT STUDY COMMITTEE OF THE AMERICAN
WATER WORKS ASSOCIATION RESEARCH FOUNDATION
. . . "NO FIRM EVIDENCE SHOWS THAT THE
PROPER USE OF ASBESTOS-CEMENT PIPE POSES
A HAZARD TO HEALTH BY REASON OF INGESTION
OF ASBESTOS FIBERS . . . THE PROBABILITY
OF RISK TO HEALTH FROM THE USE OF SUCH
SYSTEMS IS SMALL - APPROACHING ZERO."

⁷³
FALSE ACCUSATIONS AND "GUILT BY ASSOCIATION"
HAVE CREATED A PERCEPTION OF RISK ABOUT A/C
PIPE; SCIENTIFIC MEASUREMENTS AND COMMON
SENSE SHOW THIS DISTORTED PERCEPTION HAS NO
BASIS IN FACT.

^{A60}
THE A/C PIPE INDUSTRY HAS A COMMITMENT . . .
A COMMITMENT TO QUALITY WATER. QUALITY WATER
DEMANDS ^{A61} . . . CONSERVATION IN USE . . . DILIGENCE
IN TREATMENT ^{A62} . . . AND ECONOMICAL RELIABILITY
IN DISTRIBUTION. ^{A63} DESIGNED FOR VALUE . . .
ENGINEERED FOR PERFORMANCE ^{A64} . . . SCRUTINIZED FOR
SAFETY ^{A65} . . . A/C PIPE IS AS COST-EFFECTIVE . . .
RELIABLE ^{A66} . . . AND SAFE . . . AS ANY WATER PIPE
IN COMMON USE TODAY ^{A67} . . . AND THAT'S A FACT!

A68

CONTINUING TO PROVIDE PRODUCTS OF INTEGRITY

A69

... WHICH THE PUBLIC CAN USE WITH

A70

CONFIDENCE . . . WILL REMAIN THE COMMITMENT

OF THE A/C PIPE INDUSTRY . . . A COMMITMENT

A71

IT INTENDS TO KEEP . . . TODAY . . .

A72

TOMORROW . . . AND IN THE FUTURE.

(Slides A74, A75, 79 run to conclusion.)

**RECOMMENDED
WORK PRACTICES**

"RISK AND RESPONSIBILITY"

SCRIPT - KEYED SCRIPT

CTD032380

"Risk and Responsibility" (1)

NARRATOR:

¹ Blank slide - sound effects

YOU² BUILT THE AMERICAS . . . YOU³ BUILT
EUROPE, THE⁴ MIDDLE EAST . . . AND MORE.

YOU⁵ . . . THE MEN AND WOMEN OF THE
CONSTRUCTION INDUSTRY⁶ . . . AND YOUR
PREDECESSORS . . . SINCE⁷ MAN FIRST PUT
ONE STONE UPON ANOTHER.

YOU⁸ BUILT THE GREAT HIGHWAYS OF THIS WORLD
. . . THE⁹ BRIDGES . . . THE RAILROADS . . .
YOUR¹⁰ HAMMER DROVE THE GOLDEN SPIKE. YOU¹¹
BUILT THE SKYSCRAPERS . . . THE¹² SOARING
MONUMENTS TO MAN'S INGENUITY AND DESIGN.

YOU¹³ REACHED ACROSS CANADA'S ENDLESS PRAIRIES
. . . TAMED THE AUSTRALIAN OUTBACK . . .
YOU LABORED BENEATH THE¹⁵ MIDNIGHT SUN TO
BRING QUALITY DRINKING WATER TO MILLIONS
OF PEOPLE.

YOU BUILT SEWER¹⁶ SYSTEMS TO MAKE THE
ENVIRONMENT CLEAN AND HEALTHY . . .
FOR US, OUR CHILDREN,¹⁷ AND CHILDREN YET
UNBORN.

YOU¹⁸ BUILT THE HARBORS AND THE CITIES . . .
THE¹⁹ AIRPORTS . . . AND THE SPACEPORTS²⁰
. . . SPRINGBOARDS TO THE STARS.

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"Risk and Responsibility" (2)

THE CONSTRUCTION²¹ INDUSTRY CAN BE PROUD OF
ITS CONTRIBUTION TO THE QUALITY OF LIFE
. . .²² AND TO THE ECONOMIC WELL-BEING
. . . OF MANKIND.

THIS SUCCESS HAD BEEN HARD WON.

²³ CONSTRUCTION IS A TOUGH, DIFFICULT,
DANGEROUS BUSINESS. IT'S RISKY . . .
FROM A BUSINESS²⁴ POINT OF VIEW . . . AND
FROM A PERSONAL POINT OF VIEW.

RISKY BUSINESS . . . GOOD²⁵ WEATHER, IN
ON SCHEDULE, A PROFITABLE JOB. . .
BAD²⁶ WEATHER, BAD LUCK, AND A WIPEOUT ON
THE NEXT . . .²⁷ CONTRACTORS KNOW THE
BUSINESS RISKS ALL TOO WELL.

CONSTRUCTION ALSO POSES OTHER RISKS²⁸
. . . THE RISK OF A STRUCTURE COLLAPSING²⁹
. . . THE RISK OF A FIRE OR EXPLOSION³⁰
. . . THE RISK OF A TRENCH CAVE-IN
. . . AND SMALLER RISKS TOO . . . CUTS³¹
AND BRUISES, BROKEN TOES, BATTERED FINGERS.

MAYBE THAT'S WHY THE CONSTRUCTION INDUSTRY
³²ATTRACTS THE REGULATORS . . . FROM THE
NATIONAL CAPITOL . . . FROM THE STATE AND
PROVINCE. IN THEY COME . . . WITH THEIR
³³CLIPBOARDS AND THEIR LONG CHECKLISTS AND
THEIR ENDLESS FORMS TO BE FILLED OUT IN
DUPLICATE . . . TRIPLICATE . . . OR
QUADRUPLICATE.

BUT THE INDUSTRY DOES NOT LEND ITSELF
EASILY TO REGULATION³⁴ . . . ITS WORK
FORCE IS TRANSIENT . . . WORK ONE WEEK,
GONE THE NEXT.³⁵ AND ITS WORKPLACE IS
HIGHLY MOBILE . . . WITH MEN AND EQUIPMENT
MOVING FROM SITE TO SITE. THE ³⁶CONSTRUCTION
INDUSTRY ALSO IS EXCEPTIONALLY DIVERSE . . .
RANGING FROM "HIGH STEEL"³⁷ TO HUGE
TUNNELS BENEATH . . . SOMETIMES FAR
BENEATH . . . THE GROUND.

THE CONSTRUCTION INDUSTRY HAS GROWN
ENORMOUSLY . . . ³⁸AND HAS HELPED THE
WORLD TO REACH FARTHER AND HIGHER
THAN EVER BEFORE. BUT WITH ³⁹GROWTH . . .
AND WITH THE DEVELOPMENT OF NEW PRODUCTS
AND NEW TECHNOLOGIES . . . COME NEW
CHALLENGES AND NEW RISKS.

SAFEGUARDING THE CONSTRUCTION⁴⁰ WORKER
FROM INJURY AND DISEASE HAS ALWAYS BEEN
A CHALLENGE. IT⁴¹ STARTS WITH UNDERSTANDING
THE OBVIOUS⁴² . . . AND THE HIDDEN . . . RISKS
. . . THEN CONTROLLING, AND FINALLY PREVENTING
THOSE RISKS THROUGH GOOD WORK PRACTICES.

⁴³GOOD WORK PRACTICES . . . NOT ONLY THE
CORRECT AND MOST EFFICIENT WAY TO DO ANY
JOB . . . BUT THE SAFEST. GOOD WORK PRACTICES⁴⁴
MAKE GOOD SENSE . . . THEY REDUCE INJURIES,
LOST TIME, PROPERTY DAMAGE, INSURANCE PREMIUMS,⁴⁵
WORKER'S COMP, AND YES, PAPERWORK.⁴⁶ GOOD WORK
PRACTICES . . . KEEP EMPLOYEES HEALTHY . . .
ON THE JOB⁴⁷ . . . PRODUCTIVE.

HOW DO YOU IMPLEMENT A GOOD WORK PRACTICES⁴⁸
PROGRAM? LET'S SEE HOW ONE CONTRACTOR DOES
IT.⁴⁹

MIKE THOMPSON OWNS AND OPERATES A
CONSTRUCTION FIRM⁵⁰ . . . HAS A FAMILY AND
A NICE HOUSE⁵¹ . . . PARTICIPATES IN COMMUNITY
AFFAIRS . . . AND IS A RESPONSIBLE AND
SUCCESSFUL BUSINESSMAN.⁵²

MIKE HIRES WORKERS WITH CARE . . . HE
WANTS PEOPLE WHO WORK HARD AND TAKE PRIDE
IN THEIR WORK . . . HE MEETS HIS CONTRACTURAL⁵³
OBLIGATIONS . . . AND HIS MANAGEMENT
OBLIGATIONS . . .⁵⁴ AND ON TOP OF IT ALL, HE
MAKES A LITTLE MONEY FOR HIMSELF.

⁵⁵ EXPERIENCE HAS TAUGHT MIKE THAT, LIKE GOOD
MANAGEMENT, GOOD WORK PRACTICES PAY OFF.

HIS DAD HAD A CLOSE⁵⁶ CALL IN A TRENCH CAVE-IN
MANY YEARS AGO . . . AND MIKE HAS NEVER
FORGOTTEN IT. EVER SINCE, MIKE HAS DONE
THINGS "BY⁵⁷ THE BOOK" . . . ON AND OFF THE
JOBSITE. HE WANTS HIS MEN HEALTHY⁵⁸ . . .
AND ON THE JOB TOMORROW.

⁵⁹ MIKE'S COMPANY DOES A LOT OF WATER AND SEWER
JOBS . . . SO HE'S LEARNED A LOT ABOUT PIPE
. . .⁶⁰ PARTICULARLY . . . ASBESTOS-CEMENT
PIPE. HE MAKES⁶¹ SURE HIS MEN KNOW ABOUT IT
TOO . . . HOW TO INSTALL IT PROPERLY . . .
⁶² AND HOW TO WORK WITH IT SAFELY.

MIKE USES PERIODIC⁶³ TAILGATE SAFETY TALKS TO
TRAIN HIS MEN. HE KEEPS THE TALKS PUNCHY AND TO
THE POINT . . . EMPHASIZING THE IMPORTANCE
OF USING RECOMMENDED WORK PRACTICES FOR
A/C PIPE.

"Risk and Responsibility" (6)

MIKE:

⁶⁵OK FELLAS, GATHER AROUND. I'M GOING TO
SHOW YOU HOW TO HANDLE THAT A/C WATER
PIPE WE'LL BE LAYING TOMORROW.

MOST OF YOU ALREADY KNOW ⁶⁶ABOUT A/C. BUT
THERE ARE A FEW THINGS I WANT TO REEMPHASIZE
ABOUT IT. FIRST, ⁶⁷IT'S EASY TO HANDLE, AND
IF YOU FOLLOW THE MANUFACTURER'S INSTALLATION
MANUAL, IT GOES IN THE GROUND FAST. ⁶⁸

SECOND, ⁶⁹IT CONTAINS ASBESTOS. I KNOW
YOU'VE ALL HEARD OR READ THAT ASBESTOS
CAN HURT YOU. WELL, IT CAN . . . ESPECIALLY
IF YOU BREATHE A LOT OF DUST CONTAINING ⁷⁰
ASBESTOS OR BREATHE IT FOR A LONG TIME . . .
YOU INCREASE YOUR RISK OF GETTING LUNG
DISEASE . . . OR EVEN CANCER . . . ESPECIALLY
THOSE OF YOU WHO SMOKE ⁷¹. . . AND ANY TROUBLE
MAY NOT SHOW UP UNTIL FIFTEEN, TWENTY,
THIRTY YEARS AFTER YOU'VE BEEN EXPOSED.

NOW, ⁷²THE ASBESTOS IN A/C PIPE IS "LOCKED-IN"
. . . BONDED RIGHT INTO THE CEMENT . . .
JUST LIKE THE "REBAR" WE USE WHEN REINFORCING
CONCRETE. ⁷³THE ASBESTOS FIBERS CAN'T GET
INTO THE AIR UNLESS YOU DO SOMETHING TO
RELEASE THEM . . . LIKE CUTTING, MACHINING
OR TAPPING THE PIPE THE WRONG WAY. ⁷⁴

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"Risk and Responsibility" (7)

MINIMIZING DUST . . . THAT'S THE KEY TO
SAFE HANDLING OF A/C PIPE . . . IT'S
SIMPLE, NO ASBESTOS DUST . . . NO RISK.

⁷⁵ BOTH THE STATE AND THE FEDS REGULATE
EXPOSURES TO ASBESTOS DUST. IF DUST
LEVELS GET TOO HIGH, BIG DADDY IS GOING
TO STEP IN AND SAY NO. ~~BUT~~ EVEN BEFORE
HE DOES, ⁷⁶ FELLOWS, I'M GOING TO STEP IN AND
SAY NO.

THE WAY TO STAY BELOW DANGEROUS DUST LEVELS
IS TO FOLLOW RECOMMENDED WORK PRACTICES . . .
LIKE SHORING ⁷⁷ UP THOSE DEEP TRENCHES IN THAT
SANDY SOIL LAST WEEK. IT BOILS DOWN TO
⁷⁸ DOING THINGS BY THE BOOK.

LET'S GO THROUGH THIS BY THE NUMBERS. ⁷⁹ A/C
PIPE IS SHIPPED FROM THE FACTORY CLEAN AND
DUST-FREE. IT'S SAFE TO HANDLE JUST AS WE
RECEIVE IT . . . EVEN IN ENCLOSED SPACES
. . . SO GO AHEAD WITH UNLOADING AND
STRINGING OUT . . . JUST LIKE WE ALWAYS DO. ⁸⁰

IN CUTTING OR MACHINING THE PIPE, USE OUR
STANDARD CARBIDE BLADE EQUIPMENT ⁸¹ . . . SNAP
CUTTERS . . . AND MANUAL ⁸² . . . OR POWER ⁸³ . . .
FIELD LATHES . . . WHEN YOU USE SHORT LENGTHS
TO SPOT ⁸⁴ A HYDRANT, IT'S OK TO REBEVEL THE
CUT END WITH A WOOD RASP.

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"Risk and Responsibility" (8)

WHEN DRY TAPPING⁸⁵ SERVICE CONNECTIONS BE
SURE TO REMOVE ALL DUST AND CUTTINGS BY
FLUSHING WITH WATER . . . DON'T USE
COMPRESSED AIR OR DRY SWEEP 'EM . . .
REMEMBER THE DUST.

⁸⁶AFTER WE GET A PRESSURE TEST ON THE LINE,
USE THAT TAPPING EQUIPMENT WE RIGGED WITH
A POSITIVE PURGE FOR ANY LAST-MINUTE WET
TAPS . . . AND MAKE SURE YOU FLUSH THE
MAIN AT THE CLOSEST HYDRANT DOWNSTREAM.⁸⁷
IF YOU HAVE TO REMOVE A COUPLING . . .
SIMPLY USE A HAMMER AND CHISEL.

AND ON THAT SEWER JOB NEXT WEEK, YOU CAN⁸⁸
USE SHELL CUTTERS TO CUT IN LATERALS OR⁸⁹
A DRILL, CHISEL, AND RASP. ALL THESE TOOLS
ARE SAFE. IN FACT, THE PIPE IS REALLY EASY
TO WORK WITH SAFELY.

⁹⁰TRY TO KEEP ALL EQUIPMENT-FREE OF DUST AND
IF YOU HAVE WASTE ASBESTOS-CEMENT CHIPS FROM
⁹¹CUTTING OR MACHINING . . . JUST PLACE THEM IN
THE TRENCH AND BURY THEM ALONG WITH THE PIPE.
REMEMBER, DON'T DRY SWEEP THIS STUFF . . . OR
USE THE AIR HOSE . . . THAT BLOWS IT AROUND.
IF YOU'RE WORKING IN THE YARD OR SHOP, USE
THE PORTABLE VACUUM . . .⁹²OR SCOOP UP THE
CHIPS AND PUT THEM IN DISPOSAL BAGS. I'LL
GET RID OF THE BAGS.

CTD032388

⁹³ THERE'S ONE THING I DON'T WANT YOU TO DO
WITH A/C PIPE AT ANYTIME . . . NEVER CUT
IT WITH AN ABRASIVE DISC SAW. THAT PRODUCES
A HELL OF A LOT OF ASBESTOS DUST.⁹⁴

I REPEAT, NEVER USE A DISC SAW OR
TO CUT OR BEVEL A/C PIPE. NEVER!
THAT'S TOO RISKY.⁹⁵

FIRST WORKER:

HEY MIKE, WHAT ABOUT ALL THOSE CHIPS AND
SHAVINGS FROM MACHINING . . . ARE THEY
DANGEROUS?⁹⁶

MIKE:

NO, BIG STUFF LIKE THAT STILL HAS THE
ASBESTOS LOCKED-IN . . . YOU JUST CAN'T
BREATHE SOMETHING THAT BIG. ANY OTHER
QUESTIONS?⁹⁷

SECOND WORKER:

YEAH, HOW COME THIS STUFF IS SAFE IF IT'S
SO DANGEROUS?

MIKE:

HEY . . . NOT MUCH WE DO IN THIS BUSINESS
ISN'T RISKY. BUT ANY RISK OF WORKING WITH
A/C PIPE IS EASILY MINIMIZED.⁹⁸ JUST USE THE
RIGHT TOOLS AND FOLLOW RECOMMENDED WORK
PRACTICES.⁹⁹ EACH ONE HAS BEEN CHECKED FOR
DUST LEVELS. THE'RE ALL WELL BELOW OSHA
REQUIREMENTS.¹⁰⁰

OK MEN, THAT'S IT. LET'S GET TO WORK AND
PUT SOME MONEY IN THE BANK.

NARRATOR:

¹⁰¹ RISK AND RESPONSIBILITY . . . FACTS OF
LIFE IN THE CONSTRUCTION INDUSTRY . . .
AND IN THE PIPE INDUSTRY.

THE A/C PIPE INDUSTRY ¹⁰² WANTS CONTRACTORS,
UTILITIES, AND CITIES TO USE ITS PRODUCTS
WITH CONFIDENCE ¹⁰³ . . . GOOD WORK PRACTICES
ARE THE BEST WAY TO SAFEGUARD YOU AND
YOUR EMPLOYEES. ¹⁰⁴

WE LIKE THIS IDEA OF GOOD WORK PRACTICES . . .
OF SELF-REGULATION . . . AND WE THINK YOU'LL
LIKE IT TOO. ¹⁰⁵

WE CONSIDER SAFETY ON THE JOB A PARTNERSHIP ¹⁰⁶
. . . THE MANUFACTURER ¹⁰⁷ . . . THE CONTRACTOR ¹⁰⁸
. . . THE WORKER ¹⁰⁹ . . . THE A/C PIPE INDUSTRY
WANTS TO DO ITS PART . . .

¹¹⁰ SO LET'S JOIN TOGETHER IN THIS PARTNERSHIP
IN SAFETY . . . AND AFTER THE NEXT JOB
COMES IN ¹¹¹ . . . ON SCHEDULE ¹¹² . . . ON THE MONEY. ¹¹³
WE CAN ALL TOAST ¹¹⁴ . . . "TO SUCCESS" ¹¹⁵ .
"TO YOUR HEALTH". ¹¹⁶