PROMOTION AND CONTROL OF PEACEFUL USES OF ATOMIC ENERGY AND RADIATION

REPORT OF

THE VIRGINIA ADVISORY LEGISLATIVE COUNCIL

To

THE GOVERNOR

And

THE GENERAL ASSEMBLY OF VIRGINIA

COMMONWEALTH OF VIRGINIA
Department of Purchases and Supply
Richmond
1960

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PROMOTION AND CONTROL OF PEACEFUL USES OF ATOMIC ENERGY AND RADIATION
REPORT OF THE
VIRGINIA ADVISORY LEGISLATIVE COUNCIL

Richmond, Virginia,
December 15, 1959

To:

HONORABLE J. LINDSAY ALMOND, JR., *Governor of Virginia*

and

THE GENERAL ASSEMBLY OF VIRGINIA

The Virginia Advisory Legislative Council in a report made to the General Assembly of Virginia in 1957, after consideration of what legislation, if any, should be adopted "to encourage participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with security and the health and safety of the public", made a report which recommended that no legislation be adopted at the 1958 Session of the Assembly but that the study be continued. Pursuant to this recommendation, the General Assembly at its 1958 Session adopted Senate Joint Resolution No. 9, which is as follows:

SENATE JOINT RESOLUTION NO. 9

Directing the Virginia Advisory Legislative Council to study matters pertaining to the peaceful uses of atomic energy.

Whereas, the development of atomic energy appears to be increasing and industrial establishments for such purposes have been located in this State; and

Whereas, the Virginia Advisory Legislative Council, pursuant to the direction of the General Assembly, has been studying the peaceful uses of atomic energy and has determined that this is a growing science and that federal and State relationships in this field need clarifying and further that any legislation or recommendation at this time would be premature; now, therefore, be it

Resolved by the Senate, the House of Delegates concurring, that the Virginia Advisory Legislative Council is directed to continue its study of the development and utilization of atomic energy for peaceful purposes and what legislation, if any, is necessary to encourage participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with security and the health and safety of the public. All agencies of the State shall assist the Council in its study. The Council shall complete its study and make its report to the Governor and General Assembly not later than September 1, 1959.

Subsequent to the adoption of this resolution it was the view of some members of the Legislature that other forms of radiation than those produced by nuclear material should be included in the study and that attention should also be given to certain potential specific hazards. To accomplish this, there was adopted at the same session Senate Joint Resolution No. 29, which is as follows:

SENATE JOINT RESOLUTION NO. 29

Directing the Virginia Advisory Legislative Council to make a study of matters pertaining to the peaceful uses of atomic energy, the control of atmospheric radioactivity and the use of X-rays and other forms of radiation.

Whereas, the development of atomic energy appears to be increasing and industrial establishments for such purposes have been located in this State; and

Whereas, the commercial and medical use of X-rays and other forms of radiation is on the increase; and

Whereas, it is desirable that proper and necessary measures be taken to protect the lives and health of the people of Virginia where they may be endangered by reason of such radioactivity in the atmosphere, and that these be based on adequate knowledge of the problems involved and the full effect of possible solutions; and

Whereas, all of these matters are interrelated because of the cumulative effect on the human body of radiation emitted by these various sources and therefore these matters should be considered together; and

Whereas, the Virginia Advisory Legislative Council, pursuant to the direction of the General Assembly, has been studying the peaceful uses of atomic energy and has determined that this is a growing science and that federal and State relationships in this field need clarifying and further that any legislation or recommendation at this time would be premature; now, therefore, be it

Resolved by the Senate, the House of Delegates concurring, That the Virginia Advisory Legislative Council is directed to continue its study of the development and utilization of atomic energy and its by-products for peaceful purposes and what legislation, if any, is necessary to encourage participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with security and the health and safety of the public and to include in its study a determination of atmospheric radioactivity in Virginia and the effect of widespread use of X-rays and other forms of radiation on the public and the necessity and desirability of measures for control of such radioactivity and use. The Council shall consider the relative responsibilities of the State and the localities in respect to air radioactivity and such other matters as the Council deems appropriate. All agencies of the State shall assist the Council in its study. The Council shall complete its study and make its report to the Governor and General Assembly not later than October 1, 1959.

Acting under the authority conferred by Senate Joint Resolution No. 32, the Council consolidated these two studies. Mosby G. Perrow, Jr., of Lynchburg, member of the Senate and member of the Council, was

selected as chairman of a committee to make the preliminary study and report to the Council. Chosen to serve with Senator Perrow were the following: Robert F. Baldwin, Jr., member of the Senate, Norfolk; Dr. Harry C. Bates, Jr., President, Medical Society of Virginia, Arlington; Lloyd C. Bird, member of the Senate, Richmond; George M. Cochran, member of the House of Delegates, Staunton; Rollin F. Conaway, E. I. duPont de Nemours & Company, Richmond; Frank A. Ernst, former manager, Allied Chemical and Dye Corporation, Petersburg; M. C. Edlund, Babcock & Wilcox, Lynchburg; Charles R. Fenwick, member of the Senate and member of the Council, Arlington; Guy L. Furr, Appalachian Electric & Power Company, Roanoke; Edward S. Harlow, Research Laboratory, American Tobacco Company, Richmond; H. Lester Hooker, State Corporation Commission, Richmond; Ralph O. Hutchison, American Machine & Foundry Company, Washington; and J. B. Woodward, Jr., Chairman of the Board, Newport News Shipbuilding and Drydock Company, Newport News. John B. Boatwright, Jr., and G. M. Lapsley served as Secretary and Recording Secretary, respectively, to the Committee.

The Committee followed developments in the field of regulation of peaceful uses of atomic energy during the past two years. It assembled voluminous literature dealing with various aspects of the problem and considered carefully what is being done by other states as well as the actions which have been taken by the Congress of the United States and the Atomic Energy Commission looking toward increased State participation in investigation, supervision and regulation of the use of radiation devices and radioactive materials. After due publicity, the Committee held a public hearing to which representatives of industries using this type of material, as well as practitioners of the healing arts and others making use of X-ray and similar devices, and the interested public, were invited to attend and state their views in connection with the subjects under study. The Committee had presented to it, and gave careful study to, several specific proposals connected with the subject of its study.

After careful consideration of the material available to it and the various views and recommendations which were made for its consideration, the Committee reported to the Council. The Council has reviewed the report of the Committee and has reached the conclusions and makes the recommendations summarized below:

CONCLUSIONS AND RECOMMENDATIONS

1. We believe that action by the State at this time is neither necessary nor desirable to regulate, promote, inspect or control the types of nuclear material which are under the jurisdiction of the Atomic Energy Commission.

2. We recommend the adoption of a declaration of the State's policy to encourage peaceful uses of atomic energy.

3. We recommend that persons possessing, storing or using radioactive materials not under the jurisdiction of the Atomic Energy Commission or radiation sources which do or can produce radiation in dangerous quantities, be required to register such materials or sources of radiation with the State Health Department.

4. We recommend that further study be given the subject of peaceful uses of atomic energy by the Virginia Advisory Legislative Council during the next biennium.

5. We recommend that further study be given the question of adoption of the proposed Southern Interstate Nuclear Compact.

Reasons for Recommendations

1. When nuclear materials were first made available by the Congress for non-military use and commercial development, a number of state legislatures adopted statutes looking either to the promotion of atomic development or state regulation of the uses of atomic energy. It is recognized that, as to radioactive materials which are yielded in or made radioactive by the radiation incident to the operation of nuclear reactors, the federal government has the primary responsibility and power. Such materials may be obtained only from, and utilized only under license by, the Atomic Energy Commission. The Congress has, in recent years, demonstrated a general intention to relinquish federal controls in this field to some extent, but it is still far from clear to what extent states may be permitted to adopt regulations. At this time, the Atomic Energy Commission has not formulated regulations regarding the relinquishment of inspection functions as permitted by the 1959 action of the Congress.

For these reasons, we believe that action by Virginia at this time would be premature. With regard to safety, we are advised that the controls which are exercised by the Atomic Energy Commission are presently entirely adequate to protect the public health and safety of the citizens of this as well as other states. Furthermore, we have serious doubts as to the constitutionality of the adoption by Virginia or any state of regulations which would be in conflict with or stricter than those of the Commission.

Regarding the promotional aspects of the study which was directed, we feel that creation of a specal agency charged with this function would be undesirable. Alert and progressive business leadership will be constantly looking for new developments in this field. This is evidenced in Virginia by the number of firms which now use some radiation processes or radioactive materials in connection with their manufacturing activities. These are used in such diverse fields as furniture manufacturing, metal working, shipbuilding, chemicals, cigarette manufacturing, and the manufacturing of pulp and paper products. Furthermore, representatives of the industries concerned who expressed their views to the Committee were, without exception, of the opinion that State regulation, control, or promotion in this field would not be desirable at this time.

Declaration of Policy Concerning State Regulation of Atomic Energy

2. The use of atomic energy and its subsidiary developments by business and industry is little more than ten years old. It has been carried on under strict regulations of the Atomic Energy Commission. The legislation enacted by Congress in 1959 under which certain regulatory functions would be turned over to the states for their control must not be construed as an invitation to regulate for regulation's sake. There are a number of features to be considered: first, unwise state regulation might well hamper developing uses of atomic energy to the eventual detriment of a state; second, the personnel necessary to enforce detailed regulations at the state level are few and difficult to obtain; third, the expense to the state of such regulation would be considerable and the federal legislation makes no provision for assisting the states w ich relieve the federal treasury of this cost.

It might be argued that new legislation is necessary to protect the public, but there are a number of answers to this. The State Board of Health has ample authority under the statutes creating it and vesting it with certain powers to control any real danger to the public. § 32-12

gives the State Board of Health sweeping powers in this area, the exercise of this power by the State Board of Health being subject to the Administrative Agencies Act, providing appeals to the courts in proper cases (Chapter 1.1 of Title 9 of the Code).

Our Workmen's Compensation Act provides compensation for injuries from radiation. Federal legislation requires licensees to carry insurance for the protection of the public against possible danger from their use of atomic energy and by-products.

Finally, this is a field in which rapid developments are taking place. It is difficult to devise legislation to take account of these changing conditions; until more is known about the nature of the problem and the best approach to regulation it is better to leave this area under AEC regulation where applicable, and the general supervision of the State Board of Health.

It must also be remembered that industrial processes to an ever greater degree are making use of atomic energy and its by-products. Virginia is making a determined effort to attract new industry and we must not enact legislation which might deter new industry from locating here. For industry to be subject both to state and federal regulation, as would be the case were Virginia to adopt legislation affecting materials controlled by the AEC, would be to subject industry to unnecessary burdens.

We are anxious for the states to take over from the federal government and exercise as many functions as they can. However, without clarification of the powers the State would have and how they might be exercised, we are reluctant to recommend any legislation.

There is appended to this report a declaration of policy setting forth the intention of the State to encourage the peaceful uses of atomic energy in a manner consistent with the protection of the public health. We recommend its adoption.

Registration of Radiation Sources

3. As noted above, sources of radiation which arise from the use of nuclear materials under license from the Atomic Energy Commission are now adequately protected by the terms of the licenses under which they are used. However, there are other sources of radiation which could be hazardous and which we feel should be the subject of legislation. These include X-ray machines, fluoroscopic devices and particle accelerators, and radioactive by-products which are not produced in atomic reactors and are not licensed by the AEC. We do not feel that there is a need for any drastic legislation or that a grave danger generally exists from these sources because for the most part these machines and materials are used by highly trained scientists and technicians under conditions which are designed to protect the health of persons who might be exposed to radiation from such sources.

Nevertheless, there is no single State source from which information can be obtained as to the number and type of such machines and materials, their location, or the potential hazards which may exist. We therefore recommend that any person possessing, storing or using any material or device which emits or is capable of emitting radiation in dangerous quantities and which is not under the jurisdiction of or licensed by the Atomic Energy Commission should be required to register with the State Health Department and furnish such information as may be necessary for

an inventory of such sources of radiation. We do not envisage at this point any further control on the part of the State. The proposed statutes would carry a small penalty for failure to register but otherwise there would be no enforcement machinery involved. The statute would of necessity have to exempt machines and materials which emit radiation in quantities which are not dangerous, otherwise it would cover, inadvertently, many modern electronic appliances, such as television sets, which give off radiation in minimal quantities.

Senate Joint Resolution No. 29 requires that the Council include in its study a determination of atmospheric radioactivity and also consider the relative responsibilities of the State and the localities in respect to air radioactivity. At two locations in Virginia, continuous checks of atmospheric radioactivity are being made. These studies have shown that there has not been, in Virginia, any dangerous quantity of atmospheric radiation. The highest records of atmospheric radioactivity in Virginia were 40 micromicrocuries per cubic meter of air on August 1, 1957 at Richmond and 33.3 micromicrocuries at Hampton Roads on October 31, 1958. This may be compared to an all-time high at Salt Lake City, Utah, of 7,000 micromicrocuries per cubic meter of air. Atmospheric radioactivity at the present time remains reasonably static at about 0.2 micromicrocuries per cubic meter of air at Richmond and below 0.5 micromicrocuries at Hampton Roads. The highest concentration as a result of rainfall activity which has been recorded in Richmond was 800,000 micromicrocuries per square meter on September 9, 1957, but at the present time rainfall radioactivity at Richmond is less than 1,000 micromicrocuries per square meter.

In connection with the study of radioactivity in the air, consideration was given to other forms of atmospheric pollution, generally referred to as "smog". Legislation was offered at the 1958 Session of the General Assembly which was designed to control smog, but it would also have adverse effects upon industry. With the increase in our population, greater use of all forms of energy, and new industrial processes which are required to make available to us the many benefits of research, it is probable that pollution of the air will become somewhat more widespread. Here again, we are confronted with a balancing of interests. On the one hand pure, fresh air is highly desirable, yet on the other, our attempts to bring new industry to Virginia, if successful, will inevitably add, in some small degree, to air pollution. Virginia has sought to attract new industries which would not only provide employment but would also be good neighbors in any community in which they are located and we have been successful in this attempt. The solution to the problem of smog is not yet in sight, even though large sums of money have been spent in an attempt to reduce or eliminate it. If legislation were enacted to prohibit air pollution and strict enforcement would result, the effect on Virginia's economy would be disastrous. Many of our largest industries would be forced to close, since there is no way in which they can operate, prevent air pollution, and make a profit. We do not believe that anyone is ready to pay this price. Just one of the problems incident to smog is that a concentration which is not distasteful under ordinary atmospheric conditions may become quite noticeable, though not harmful, under other atmospheric conditions. We believe that the best approach to this problem is to continue our efforts to attract desirable industries with good employment records to Virginia; such industries are anxious to avoid polluting the air insofar as is practicable. The small inconvenience that may be caused by any air pollution which they may bring about will be more than counterbalanced by the benefit to the community and to the State. With the continuation

of this study, Virginia can keep abreast of attempts to find answers to the problem of smog and be in a position to take advantage of such knowledge as it is developed; the other course would be to adopt legislation which would either be ignored or irreparably cripple many of our best industries.

Continuation of the Study

4. We have indicated that we feel that legislation in this field other than as regards the matters hereinabove discussed would be premature and that any legislation which was restrictive in its nature would be unwise. We have also noted that there is still a need for clarification as to the relative powers and responsibilities of the federal government, acting through the Atomic Energy Commission, and of the several states. As the statutes enacted by the Congress are changed from time to time and as administrative activity of the Atomic Energy Commission may indicate a necessity or the desirability of State action, we believe that Virginia should be in a position to deal with the subject further. Accordingly, we recommend that a continuation of the instant study be provided for by the General Assembly to the end that it may, at its 1962 Session, be in possession of any facts which may develop to indicate that legislation should be adopted. The study group should be representative of the several interests which are concerned with this problem so that different viewpoints may be represented.

Study of Southern Interstate Nuclear Compact

5. We were presented during our study with a draft of the proposed Southern Interstate Nuclear Compact. A number of its provisions appear far-reaching. A state ratifying the Compact could be made subject to an action of the governing board, even though the State's representative voted against the proposal. Many interstate compacts contain a provision to the effect that a state, to be bound under the compact, must have its representative on the governing board vote for the proposal, in addition to having the proposal adopted by a majority of the members of the governing board.

Further, many of the activities which would be undertaken by the agency set up under the Compact would seem to duplicate activities of the federal government and otherwise appear quite ambitious for a first entry into the field of atomic energy regulation by the states. We are impressed with the need for cooperative action by the states and believe that the general line of approach set forth in the Compact is a desirable one. However, we believe that the Compact should be further studied by Virginia before approval thereof is given. It is quite probable that such a study would develop means to clarify the activities of the agency to be created under the Compact, provide more protection to a signatory state, avoid duplicating functions of the federal government, and, in general, ensure that industry would not be subject to unnecessary regulation. The resolution providing for the continuation of the study of State regulation of atomic energy also includes provision for further study of the Compact.

Acknowledgment

The Committee desires to record its appreciation for the information furnished it from so many sources by various organizations and individuals

and especially to those who gave it the benefit of their views at the public hearing and in writing since that time.

Respectfully submitted,

JOHN H. DANIEL, Chairman
ROBERT Y. BUTTON, Vice-Chairman
C. W. CLEATON
JOHN WARREN COOKE
HARRY B. DAVIS
TOM N. FROST
J. D. HAGOOD
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J. J. WILLIAMS, JR.

STATEMENT OF CHARLES R. FENWICK IN REGARD TO THE REPORT ON PEACEFUL USES OF ATOMIC ENERGY

I concur in the report as far as it goes. The report really deals with two separate fields of radiation. In so far as it discusses atomic energy relating to reactors, I feel that this is largely under the control and supervision of the Atomic Energy Commission and Virginia would do well to await further developments before adopting any legislation dealing with regulation.

The use of X-ray machines, Fluoroscopic devices and the like is not subject to the Atomic Energy Commission and, at present, is under no one's control. The only statute dealing with the subject relates to the use of Fluoroscopes in connection with the fitting of shoes.

It is now well established that X-ray machines, Fluoroscopes and the like, in the hands of untrained persons, are lethal weapons and can permanently impair the health of innocent victims. These devices can be procured and used by anyone who can pay the price of the machine.

The Medical Society of Virginia has become sufficiently concerned that they presented a bill to this Commission recommending the regulation and control of the use of these devices.

The fact that the State Board of Health has wide general powers to adopt rules and regulations is not the answer. Such an administrative board always hesitates to adopt rules and regulations having the force and effect of law without specific authorization from the Legislature. Such a Board is entitled to the guidance of the General Assembly as to the specific powers in this field delegated to it.

I do not believe that registration of such devices with the Department of Health is a sufficient answer to this ever-increasing problem. Not only is there grave danger to the person subjected to the X-ray when the machine is operated by an unskilled person, but persons in the immediate vicinity, unless proper precautions are taken, can be subject to the radiation. Many of the operators of X-rays and Fluoroscopes have no training other than that given by the salesman and, yet, in the face of this condition, we say that registration of the devices is all that is necessary at this time.

I feel that the medical bill, as submitted, should have been studied and substantially revised, and a bill, thus revised, carrying out its intent, should have been adopted by the Council and made a part of this report so that it could be considered by the General Assembly.

Respectfully submitted,

Charles R. Fenwick

December 18, 1959

A BILL to require persons possessing, storing or using radiation machines and radioactive materials to register with the State Health Department and to provide penalties for violations.

1. § 1. As used in this act:

(a) "Radiation" means and includes alpha, beta and gamma rays, X-rays, high speed electrons, neutrons, high speed protons and other atomic particles, but does not mean or include sound or radio waves, or visible, infrared or ultraviolet light;

(b) "Radiation machine" means any device that produces, or is capable of producing radiation;

(c) "Radioactive material" means any material that emits radiation spontaneously; and

(d) "Person" means any person, firm or corporation, and any political subdivision, institution or agency of the State.

§ 2. It shall be unlawful for any person to possess, store or use any radiation machine or radioactive material, other than a machine or material which is placed by any law of the United States under the jurisdiction or control of the Atomic Energy Commission and is under license by that Commission, unless such person shall register the same with the State Health Department. Such registration shall be on forms provided by the State Health Commissioner and the person registering such machines or material shall set forth, as to any machine, the type of such machine, the amount of radiation which it produces or is capable of producing, the use to which such machine is put, and the protective measures employed in connection therewith; and as to any radioactive material, the type and quantity of such material, the amount of radiation emitted by such material, the use to which such material is put, the manner in which it is stored, and the protective measures employed in connection therewith.

§ 3. This act shall not apply to:

(a) Electrical or electronic equipment operated at voltages less than twenty-five kilovolts, which are not primarily intended to produce radiation;

(b) Domestic television receivers;

(c) Radioactive material in quantities less than those which are generally licensed by the Atomic Energy Commission under Parts 30 and 40 of Title 10 of the Code of Federal Regulations in force on January one, nineteen hundred sixty; or

(d) All naturally occurring radioactive substances except the following:

(1) Radium, in quantities which emit, from unsealed sources, more than one-tenth microcurie of radiation, or from sealed sources, more than one microcurie of radiation.

(2) Thallium in quantities which emit from unsealed or sealed sources more than fifty microcuries.

(3) Polonium in quantities which emit from unsealed sources more than one-tenth microcurie of radiation or from sealed sources more than one microcurie of radiation.

§ 4. Any person failing or refusing to register with the State Health Department as required by this act shall be guilty of a misdemeanor and shall be punished by a fine of not less than ten nor more than one hundred dollars.

SENATE JOINT RESOLUTION NO.

Expressing the policy of the Commonwealth of Virginia relating to development of peaceful uses of atomic energy and nuclear materials.

Whereas, the rapidly expanding scientific, industrial and medical applications of nuclear energy and radioactive by-product materials are of increasing importance to the sound growth and development of the economy of this Commonwealth and the health and welfare of its citizens; and

Whereas, it is important to those who are pioneering in the utilization of nuclear and by-product materials for scientific, industrial and medical purposes to know that the General Assembly of Virginia favors and intends to foster such developments; now, therefore

Resolved by the Senate of Virginia, the House of Delegates concurring, That the General Assembly of Virginia hereby declares it to be the public policy of this Commonwealth to foster and encourage in all legitimate ways consistent with public health and safety the use of nuclear energy and radioactive by-product materials for peaceful scientific, industrial and medical purposes. State legislation in the field shall be consistent with these objectives.

SENATE JOINT RESOLUTION NO.

Directing the Virginia Advisory Legislative Council to continue its study of the peaceful uses of atomic energy.

Whereas, the Virginia Advisory Legislative Council has, pursuant to the direction of the General Assembly, been studying the peaceful uses of atomic energy, and has reached the conclusion that no action to impose State regulation in this field should be taken at this time but that developments in the future should be carefully studied; and

Whereas, there has been proposed for adoption by this Commonwealth an interstate compact with certain other Southern states looking toward joint action to develop, utilize and regulate peaceful uses of atomic energy in this region, which compact is the product of long study by a distinguished group of scientists and which compact has many features which would prove advantageous to this State; now, therefore,

Resolved by the Senate of Virginia, the House of Delegates concurring, That the Virginia Advisory Legislative Council is directed to continue its study of the peaceful uses of atomic energy for scientific, industrial and medical purposes, and what legislation, if any, should be adopted to encourage participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with security and the health and safety of the public. In connection with its study the Council shall consider the desirability of entry by Virginia into the proposed Southern Interstate Nuclear Compact, either in its present form or with modifications. Agencies of the State government shall assist the Council on request. The Council shall complete its study and make its report to the Governor and the General Assembly not later than November 1, 1961.