In the past, environmental health practice has, for the most part, been geared to the control of living agents of disease. It was justly so because our pressing problems were those associated with the spread of communicable diseases. As the nation started its slow transition from an agricultural to an industrial economy, the population shifted from farm to city and brought with it an increasing need for public water supplies which were ample and safe. Sanitary engineering techniques of water purification and sewage treatment moved with the times. This history you know— it's a bright history and one we are proud of.

The control of insect vectors of disease also came within the scope of sanitation practice, and techniques were slowly and tediously developed to combat malaria, yellow fever, plague, and endemic typhus.

With the growth in the urban population came more complex problems in milk and food supply, and certainly these you know. Banishment of the family cow and the abandonment of home preservation of food shifted the responsibility for the safety of these products from the individual to the community. Sanitation practice was, therefore, broadened, and measures were developed and applied to control the spread of disease through milk, shellfish and other foods.

As we approached mid-century, sanitation practice was at a crest. Control procedures had been worked out for most of our problems, and we could enjoy the luxury of refining proven techniques to obtain more effective and economical ways of doing a job we now seemingly so well understood. In our traditional areas of responsibility—water, milk, food, vector control, and sewage treatment— we knew what to do and how to do it. True, there were gaps in our knowledge that still required research, and some of our programs appeared to need further development of techniques, as is still the case, but by and large, our essential needs were resources and public support to get the job done.

About mid-century began a rude awakening. Problems were changing and they were changing at an accelerating pace. Problems were emerging that differed in magnitude and in nature from those of the past, and these could not be resolved with existing methodology and concepts. The origins of these striking changes were, obviously the explosive population expansion in metropolitan centers, and the rapid pace of scientific discovery and technological change. In 1900 the population of the United States was 75,000,000, two-thirds of which were on farms. In 1950, the population had doubled and shifted. By then, two-thirds were in cities. Today, the population is above 172,000,000 with more than 100,000,000 living in metropolitan centers, and our population experts forecast that, in 20 years, we will have an additional 50,000,000 Americans, with three out of every four persons living in metropolitan areas.

Forty years ago there were less than 50 metropolitan areas; today there are 174. These embrace some 16,000 local governments with more in sight, since suburbs are growing at six times the rate of the cities. Each of these local jurisdictions has its autonomy and prerogatives which result in a maze of complications in dealing with environmental health problems. The water supply is not coterminous with the sewage authority, which, in turn, is not coterminous with the air pollution authority, and the milk and food supply is shared and inspected by a varying number of jurisdictions.

Even more striking is the growth in industry. Within the short period of 50 years, more technological changes have occurred than in the previous 2,000 years. Most of us here today have witnessed the gasoline engine supplant the beast of burden, and the other vast changes in transportation and communications. We may be impressed with the 900 per cent increase in industrial production since 1900. But it is more remarkable that more than half of this increase has occurred since 1940.

The impact of this expansion on our economy and standard of living is reasonably apparent. The consequence of much of this on environmental factors is not so readily observed and as yet, is less clearly defined and understood.

The key word in this dynamic age of science and
technology is "change", but it is not the fact of change that is so significant. It is the pace of change. Industry continues its magnificent job of combining the research product of the basic scientists with the Twentieth Century art of modern technology. For example, in the chemical industry, synthetics—almost unknown in 1930—are now commonplace. Nearly a million of these compounds are in production and in use in construction, in household products, in clothing, and in foods. And now, we are seeing the field of nuclear energy unfold—the atomic age—with its gigantic potentials for both constructive and destructive use. The lag between basic discovery and industrial application continues to diminish, and we have an ever-increasing expansion in new substances, new products, new uses, and, unfortunately, new pollution.

The accelerated pace of population expansion and industrial development is already putting stress on basic resources. If we look about we can see situations where time is running out. In many areas, shortage of water is threatening further expansion, and other areas are approaching the limit of their air supply to absorb the waste products of their industry.

The nation's water resource is now a problem of top priority. The water problem is one of increasing demands, seasonal shortages, floods and pollution, or more simply—too much or too little or too bad. At present, the urban dweller averages 150 gallons of water use per day. Forty years ago, the average was about one-third that amount. The water that goes into production of things you eat and wear and use raises the national per capita requirement to above 1,500 gallons per day. For most metropolitan centers, water supply is a pressing problem. The relationship between metropolitan water supplies and water pollution grows even closer. Water pollution is more than a waste; its control has become essential to the need for repeated reuse of streams as they flow from city to city.

The problem is not limited to adequacy of supply; there are health implications as well. While population densities are still, in most areas, below the point where bacterial quality of raw water to be treated is seriously endangered, a projection of population and industrial trends over a decade or two have a sobering effect. One might predict with sound argument that, in time, and perhaps not so far off, public water supply will again be a major public health concern in the nation.

With respect to air contamination, the situation must be faced that the community air supply, too, has finite limits and that dilution alone will not always dispose of the increasing variety of stack wastes. While we must frankly admit that we do not as yet know the specific physiological damage that may be caused or accentuated by air pollution, we cannot afford to dismiss the episodes at Donora, Pennsylvania, in 1948, and at London, in 1952, as freak incidents. Today, every metropolitan area has air pollution problems of varying magnitude. For most cities, the situation will grow worse before practical remedial measures are worked out.

The impact of the changing environment is also reflected in the nation's food supply. Here, it is reassuring to find that our colleagues in agriculture forecast no food shortage in the foreseeable future. This in itself is an example of the complex interplay of the opposing forces in the present era of population expansion and advancing science and technology.

One would expect agriculture to be hard pressed to keep pace with the expanding population in an era when people are migrating to metropolitan centers and large tracts of farm land are being diverted into suburban developments. Yet, these factors have been offset by the effects of science and technology. Research has provided new techniques of cultivation and management as well as new strains and varieties of plants and animals, all of which have greatly increased agricultural productivity. The far-reaching effect of technology is illustrated in the substitution of the truck and tractor for the horse and mule. It has not only speeded up many farming operations, but has also released some 70,000,000 acres of cropland to the production of agricultural commodities for human use—an area approximating that of New York, Pennsylvania, and New Jersey.

The most important health implication of our modern age on the food supply is, perhaps, our increasing dependence on chemicals. We use fertilizers, hormones, antibiotics, herbicides, germicides, fungicides, and pesticides. Some of these, although beneficial through their contribution to agricultural productivity, are poisons and as such, a potential threat to human health. It is not possible to evaluate this threat in the same terms as the communicable diseases which, by virtue of their explosive nature, lend themselves readily to statistical assessment. With chemicals, we are concerned not just with the acute reactions but also with the effects of low-level chronic exposures encountered through food, water, and other sources.

The atomic age introduces new problems, new terms and new dimensions. Radioactive contamination does not follow established formulas of dispersion, dilution and biochemical actions. It requires assessment in the light of the health significance of very small quantities of materials and their indestructibility. For this reason, we are interested in the amounts of radiation being introduced into the environment from all sources—natural, fallout, X-ray, and commercial use. With nuclear power plants now
a reality, with atomic powered submarines in use, and with other applications on the way, there is need to step up substantially the public health activity in this important field.

The nature of these problems emphasizes a need for a coordinated approach in environmental health; perhaps a need to attack certain problems on a multidisciplinary categorical basis. At least, we must have free interchange of information among those responsible for control of specific segments of environmental health and among those responsible for local areas. With a potential for widespread dispersion of chemical and radioactive contamination, the resulting health problems are not isolated in compartments of programs or jurisdictions. There is a quantitative aspect to these problems, and we must know the total exposure from all sources to evaluate properly the effects of amounts received through a single channel.

Present concentrations of chemical and radioactive contaminants are still low. Authorities, for the most part, are agreed that such contamination is not as yet a major health hazard. However, when we project trends—keeping in mind that technology is accelerating—the indicated concentrations of contaminants in air, water, and food, even a short ten years hence, have sobering implications.

We in public health must be realists and promptly face up to the task of working out technical and administrative procedures to assist in orderly progress and to safeguard public health. We must anticipate our problems and define our research needs in order to keep pace with new developments.

The public health implications of this age of change is not limited to the emergence of new pollutants. Population growth and shift, and technology have also accentuated many existing problems and complicated our programs of control. In this regard, we must accept the fact that the techniques of yesterday may not fit our current problems, and we must be ready to explore possibilities of doing a job by different means.

In the past decade, you have witnessed revolutionary changes in the milk industry. Once characterized by small enterprises each with local areas of procurement and distribution, the size of pasteurization plants has increased and the number decreased, and their procurement and distribution areas have broadened proportionally. On the technical side, there have been the advent of the combine milker, the farm tank, bulk pick-up, new pasteurization processes, new methods of packaging and distribution, and now automation with its substitution of tanks, pumps and vacuum tubes for the scrub brush in cleaning of milk equipment.

These changes have required adjustment and re-orientation of control procedures and have pointed up the need for greater uniformity of requirements and reciprocity of inspection among jurisdictions. Your Association can be proud of its role and the role its committees have played in analyzing these developments. In cooperation with other health groups and industry, the committees are working out standards and procedures which accept progress and preserve public health protection.

With food, the changes have been equally significant. One has only to walk down the aisles of any supermarket to gain an appreciation of the value of these changes to the American consumer. Perishable foods—once available only during harvest season or in a particular locality—now may be had at all seasons of the year by every housewife, and the ever-increasing variety of precooked frozen foods and other prepared foods are removing much of the drudgery from home meal preparation. The trend is toward convenience. This is, perhaps, best illustrated by the tremendous growth in automatic merchandising. The dollar volume of merchandise sold through vending machines (about half of which is food and beverages) now exceeds two billion dollars annually—a four-fold increase in the past ten years. Back of these trends are a host of changes in food technology and, as in the case of milk, your Association is to be commended for its cooperative work in developing safe procedures and standards.

These cooperative programs are in accord with present-day needs. The free give and take among representatives of health agencies and industry at working conferences of the 3-A Sanitary Standards groups and the National Sanitation Foundation not only provide practical solutions to equipment problems, but also contribute to the mutual understanding of viewpoints that is so necessary in this age of change.

I would also like to comment on another important activity of your Association—your work on the professional development of the sanitarian. Considering the importance of his work and contributions to better health, universal professional recognition is long overdue. Your work and that of other sanitarian organizations have done much to enhance the status of the sanitarian. The formation of the Sanitarians’ Joint Council in which your Association, the National Association of Sanitarians, and the American Public Health Association all participate, is another forward step. It can prevent the wastes and tragedies that have occurred with other professions who did not provide a forum where organizations having parallel interests could meet and agree on one program with consolidated support.

In developing your program I would suggest that you not limit your thinking to the traditional and
established activities of the sanitarian. There is need for new skills and competencies to cope with coming problems. The stature of sanitarians will be increased if these can be supplied from his category.

In closing, I would like to emphasize the significance of change and the pace of change on the future course of environmental health. Our old ally Time is diminishing by geometric proportions. It is no longer possible to probe and explore every facet of a problem or to proceed through sequential steps of research, development of control procedures, and ultimately implementation of a program. Rather, these steps must be merged into a coordinated, concurrent activity with initial control measures based on the best judgment of a trained profession. In this setting, research becomes even more important and must be an integral part of programs of control.

Anticipation and mobility will be key words in dealing with our future problems. Anticipation in the sense of sifting new developments for hazards, and building in health protection where it is needed. Mobility in the sense of being able to progress with the times, in order that our programs may be in keeping with the current situation.

Your Association, with its fine record of constructive action will, I am sure, continue to make significant contributions to the solution of our new problems.

THE INTEGRATION OF INDUSTRIAL SANITATION

J. Lloyd Barron

National Biscuit Company, New York

Industrial sanitation, in its broad concept, means the physical maintenance of the work place, not just in manufacturing plants, but in every place outside the home where people are assembled in numbers for a multitude of purposes—business, travel, education, worship, national defense, entertainment, health, even detention. It is, therefore, a factor as big as industry and business and all our sociological activities. It accommodates a high percentage of the 65,000,000 persons employed in this country, and many millions more who receive the services of the employed.

The Institute of Sanitation Management is proud of its unique position and its opportunities in undertaking to represent this function, this service, and the people engaged in it. Yet admittedlly, the function—industrial sanitation—is just beginning to be recognized for what it is—a vital element in the producing of goods and the providing of services, economically significant, bearing on human health and well-being, and engaging the thought and energy of millions of persons in this country.

ISM REPRESENTS SOMETHING NEW

Few of us here have been long engaged in this work; it is just emerging as a recognized management job and it is regrettable fact that the top industrial executives and the management experts who have thought with any real perception about industrial sanitation are distinctly in the minority. Is it any wonder, then, that industrial sanitation appears, in some instances, to be an unstable function? To be more explicit, why in some industrial corporations and in some manufacturing plants is there too frequent turnover of supervision and a tentative, rather ill-defined approach to industrial sanitation? The answer probably lies in three circumstances: (a) the company management doesn't clearly comprehend the meaning and place of industrial sanitation in the plant organization and operation; (b) the management personnel assigned to the function do not fully understand the job nor have adequate supervisory and technical backgrounds for its handling; and (c) a combination of the above factors, leading to a failure to separate the function and then to make it an integral part of the plant operation.

When we look at the roster of members and their affiliations represented in the Institute of Sanitation Management, we see an imposing array of well-known corporate names. Obviously, the function of industrial sanitation has had some degree of recognition and acceptance in each of these operations, but in how many corporation and major manufacturing plants is it established as distinct, and recognized as indispensible? I would like to explore with you some of the reasons for this situation and some of the ways by which industrial sanitation can become properly integrated.

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2 President, The Institute of Sanitation Management.