

Division of Professional Relations  
Box 286, Rahway, N.J. 07065



DENNIS CHAMOT, *Editor*

No. 21  
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## FROM THE EDITOR . . .

### Election Results

The following are the official results of the last DPR election (\* elected):

<i>Chairman-elect</i>	
Madeleine M. Joullie*	177
Alan L. McClelland	86
<i>Secretary</i>	
Margil W. Wadley*	192
John H. Nelson	67
<i>Member-at-Large</i>	
Alan W. Verstuyft*	176
Donna McNabb	81

Ballots sent: 527

Ballots returned: 264 (50.1%)

### Report from Honolulu

Yes, Hawaii is very nice, the weather is superb, and the McDonald's serves guava juice with your Big Macs, and in spite of all of that, your Division representatives at the meeting worked pretty hard (if you don't believe me, ask my wife!).

Maybe it was the weather, but this meeting was not as exciting as some in the past. The various committee meetings, such as Economic Status and Professional Relations, continued their usual discussions. Professional Relations, with the help of Amy Hunter of ACS staff, is completing a survey of severance pay practices in various countries, with the intent of eventually trying to push for U.S. legislation.

The Committee on Professional Relations also approved a statement on hazards and toxins. It's a pretty good statement, and it is high time the ACS did something official in this area. Needless to say, there was much discussion of this, and now the trick will be to get it printed in C&EN for all the world to see. I don't know at this writing what will happen, so for the benefit of DPR members, the entire statement is reproduced below:

"The American Chemical Society has a long standing and recognized concern for the health and safety of the public and workers in chemical industry. These concerns are reaffirmed in our Professional Employment Guidelines which state that both the chemist and the employer "should strive to insure that products and processes are adequately tested and that potential hazards are properly identified to the public."

"Nevertheless, increasing public concerns for the environment and an increasing awareness and knowledge of occupational hazards and diseases demand increasing vigilance on the part of both chemist and corporation. Possibly our perception and exercise of responsibilities, both corporate and individual, have lagged behind the public's changing criteria of responsible citizenship. The expectations of the lay public for the exercise of corporate and chemist responsibility obviously go far beyond those which have been felt as reasonable in the past.

"The damaging sequence of events which have involved Allied Chemical, its contractors, and some of its chemists, past and present, in what has become identified as the "Kepone Case" points up the inadequacy of past corporate monitoring. The "Kepone Affair" has not been a unique and isolated disaster. The problems of the Velsicol Corporation and Michigan Chemical, and the less publicized problems of Hooker Chemical, Dow Chemical, and many others have, and are, spawning a public image of a profession and an industry concocting insidious poisons and threatening even the genetic future of the nation. Disclaimers on packages and rigorous controls during manufacture will no longer suffice to quiet public anxiety.

"Much damage has been done which will not be repaired either easily or soon. It must be recognized that carelessness and irresponsibility by one are an injury to all.

"A corrective, educational measure, de-

serving of the Society's support, should be directed toward the educational establishment and the chemist himself. It is no longer excusable that a chemist as a professional be ill aware of the physiological hazards of his job. It is recommended that every chemist should complete a course or courses in toxicology and hazards which will at least partially protect both himself and his fellowman. The Society could well direct some of its resources toward impressing this message upon the academic community. Toward this end, it is recommended that (a) every school offer a course in toxicology and safe handling of chemicals available to both undergraduate and graduate students of chemistry and chemical engineering and (b) that every chemistry department include chemical safety as an important feature in every chemistry laboratory course.

"Beyond the Society's affirmation of responsible behavior and its propounding of guidelines, it possesses one significant tool for change and improvement—*publicity*. Only by full exposure can the dimensions of the task ahead be assessed and a basis for corrective action established. Members should bring to the attention of the Hazards and Toxins Subcommittee of CPR any alleged violations of public health and safety." End of statement.

The Council meeting has got to be one of the mildest in recent memory. I suppose the most important item involved the recent election for Director from Region VI. This was a three way race. Alan Nixon received the most votes, but not a majority. Following the rules established for this kind of a situation, the third candidate was eliminated, and the second choice ballots were distributed among the remaining two candidates. After this was done, Nixon came in second by *three votes*.

Well, friends, if it were not for the nasty events leading up to this election, including the shabby attempt to keep Nixon off the

ballot, the matter might have rested here. But there is reason to question. There was a request for a recount, which confirmed the earlier count. However, investigation revealed that a substantial number of ballots had been declared invalid (I think as many as 50). There was no way to check those determinations in part because the envelopes had been separated from the ballots (standard operating procedure, designed to protect the anonymity of the voter). Under the circumstances, it seemed to me that the fairest thing all around was to have a new election between Alan Nixon and Dick Lemmon, and I so argued on the floor of the Council. I am sorry to have to report that the Council overwhelmingly voted to accept the election results as reported by the Committee on Nominations and Elections (Chamot, Abler voted no). N&E, of course, originally voted to remove Nixon's name from the ballot (see *PR Bulletin* No. 20 for more background).

The Councilors also chose candidates for President-elect of the ACS, Al Zettlemoyer and Mary Good. You may recall that Zettlemoyer was a liberal chairman of the Council Committee on Professional Relations before he was elected to the Board of Directors.

You may have noticed that there was a record vote at this Council meeting, a great rarity in the ACS. Seems that most Councilors want to hide how they vote. Anyway, I regret to say that this one is rather meaningless. It involved the vote on raising ACS dues one dollar less than the maximum permitted by the bylaws. I say meaningless because a *no* vote can either mean that the Councilor favored no raise at all, a raise of less than three dollars, or a raise of *more* than three dollars. A simple reading of the record gives virtually no information! (Chamot, Abler voted for the raise, and voted for the record vote). To explain your Division Councilors' votes, it was felt that the three dollars would about match the rise in inflation, for the budget as a whole, so additional money was not needed at this time (especially as it would not be spent on professional relations activities!); further, while a record vote was not very meaningful in this case, I always vote for them as a matter of principle. All votes should be in the open.

The papers in this issue are from the DPR program at the Honolulu meeting. We will try to have more of them in a later issue. While on our session, you might be interested to learn that, once again, the DPR sessions were in the least accessible hotel, and audience was tiny. If this occurs again, we may get mad. Watch this space for further developments.

## Revealing Statement

A recent issue of *CHEMTECH* magazine, published by the ACS, carried a column of opinion titled, "Unions and Professionals?" The author, A.F. West, is with Rohm and Haas. While I don't want to discuss the column *per se* (those interested should look in the January, 1979, issue of *CHEMTECH*), I do think one or two comments are interesting.

Mr. West makes it clear that he does not favor unions for chemists or engineers, and he is entitled to his opinion (I disagree: chemists deserve the same protections and benefits unions have obtained for physicians, college profs, lawyers, and other professionals who have engaged in collective bargaining). The important, and revealing, comments include the following:

"So these are the social changes that are

taking place that are the threats to unionization or stronger militant actions.

"Now, in fact, the development of the *Employment Guidelines* is not a step toward unionization, but is an attempt to impede unionization, and that's why the AIChE has developed its type of policy."

In other words, there are real problems, engineers are getting restless, so before they do anything that has any teeth, let's pacify them with useless guidelines!

Can anyone really argue that these guidelines, and the ACS guidelines, have made any real substantive impact? They have been around for years, a lot of effort goes into them, and they really don't make much difference.

Needless to say, comments are welcome.

—Dennis Chamot

## Support YOUR Division —

### Sign Up Some Friends

I am a member of the American Chemical Society. Enclosed is \$4 to cover dues through December 31, 1979.

Signature \_\_\_\_\_

Printed Name \_\_\_\_\_  
*Last*
*First*

Address \_\_\_\_\_

Mail To: **Division of Professional Relations**  
**Box 286, Rahway, N.J. 07065**



# THE PROFESSIONALISM OF CHEMICAL SCIENTISTS IN CANADA

T.H.G. Michael, F.C.I.C. and D.F. Gray, M.C.I.C.

Executive Director

Director of Professional Affairs, 1977-78

The Chemical Institute of Canada

Records of the chemical profession in Canada begin with the arrival of the first chemist from Europe, 362 years ago. He was also the first European to settle permanently in Canada—probably in North America. He was Louis Hebert, the son of an apothecary in the court of Louis XIV and he came to settle in Quebec in 1617. Like his father, M. Hebert was an apothecary so it is not surprising that he extracted medicines from herbs, but in addition he burned lime and he brewed beer. Truly a renaissance chemist!

Today, Canada's chemical profession numbers more than 25,000 men and women engaged in a diversity of activities ranging from Academic to Zymotic.

Before proceeding further with discussion of Canada's chemical profession, here are a few facts about Canada which should be useful as background information for my subsequent remarks.

Canada is a large country, geographically. It measures close to 5000 miles from East to West and it has an area of nearly 4 million square miles. Thus it is slightly larger than China or the United States and almost half as large as the Soviet Union.

From a demographic viewpoint, Canada appears as a small country. Its population now totals about 23¼ million and is largely within 100 miles of the United States border. Speaking generally, about 60% is contained in the area between Windsor, Ontario and Quebec City; another 20% is on the prairies; and of the remaining 20% about half is on the Atlantic coast and half on the Pacific coast. About 10% of the population is supported by farming, by recovery of minerals, coal, petroleum, natural gas and construction, 20% by manufacturing, 60% by service industries including civil services, and about 9% of the labour force is currently unemployed and supported by the others.

Your background knowledge should also include a general understanding of our system of government and the distribution of statutory power in Canada because these are important factors in the development of professionalism.

Canada is an independent nation within the British Commonwealth. The country as a whole is governed by a parliamentary system

structured like the British parliament. We have a House of Commons to which we elect members no less often than every five years, and a Senate whose members are appointed to age 75.

In addition, Canada is divided into ten provinces. Each province has its own elected legislature. We also have municipal government by elected representatives. If you are beginning to suspect that Canadians are over-governed by a system that invites bickering, competition, and confusion between the different levels of government you are on the way to appreciating some of the basic problems of the chemical profession as well as of the nation.

In an absolute sense, the term "chemical scientist" might describe anyone who practices chemistry, but such a definition is too broad for our present discussion because it would include bakers, brewers, metallurgists, and a host of practitioners who are generally recognized as being of other professions. Some years ago the author of a report on the economic prospects of Canada's chemical industry had a similar problem when he tried to define "chemical industry." He solved it very adroitly by saying that "the chemical industry" was what was left of the nation's total industry after he had excluded every industry that was generally recognized as being not part of the chemical industry. Following his example, for the purpose of our discussion today, we define a "chemical scientist" as anyone who practices chemistry and who is not better identified as belonging to some other profession. This definition includes industrial and research chemists, biochemists, clinical chemists, physical chemists, chemical engineers, chemical technologists and chemical technicians, but it does not include brewers, cooks, hairdressers, metallurgists, pharmacists, physicians, housewives and others whose involvement with chemistry is a secondary consideration of their profession.

Canada's chemical scientists come from three sources. Most are the product of formal academic training, all or partly in Canada; some arrive as immigrants with foreign qualifications that warrant recognition in Canada, and a few gain professional recognition

through practical experience.

Canada loses chemical scientists by death and emigration, and through change of status due to moving from the chemical to some other profession. Change of profession is most common in the realm of business and commerce where it is generally regarded as personal advancement because it usually results in more responsibility and a bigger pay cheque. No one keeps a running tally on the number of chemical scientists in Canada. The actual number can only be estimated, and our guess is that a count of all chemical scientists in Canada today would show the following:

Chemists	8000
Chemical Engineers	7000
Chemical technologists	2000
Chemical technicians	8000
<b>TOTAL</b>	<b>25000</b>

Most of these are men, but the number of women in the profession is increasing in all branches. We guess that at the present time the men:women ratio is about 90:10.

In addition, there are an estimated 5000 college and university students in courses which will ultimately qualify them as chemical scientists. Of these, some 800 will graduate this year.

In general, those who qualify as "chemists" will have completed at least four years of university study with chemistry as the major content and they will graduate with a degree which is usually a B.Sc. (Bachelor of Science) in Chemistry. Some will also have completed post-graduate studies for an M.Sc. or Ph.D. Post-graduate study is usually done by those who intend to do research or teach at universities.

Chemical engineers generally have completed a four year university program in chemical engineering and have graduated with a B.Sc. or B.A.Sc. A minority go on to post-graduate study.

Chemical technologists usually have completed a three year program of post-secondary study with emphasis on chemical courses and have obtained a diploma; or rarely a B.A. or B.Sc. degree. One Canadian post-secondary institution gives a B.Tech. degree.

Technicians have special training in chem-

ical techniques and skills, gained through selective courses of study at trade or technical schools or possibly, though rarely, through apprenticeship.

Classifications within the profession are not as clear cut as these descriptions might suggest, because the implied academic stratification is not a universally recognized criterion. Also the profession is not closed to those who merit recognition as chemical scientists on account of practical experience, rather than academic achievement.

Recognition for a chemical profession in Canada commenced with the formation of the Montreal Chemical Association in 1867, the year in which Canada was constituted as a nation. Records of that Association suggest that it was mainly a guild of pharmacists.

Formal organization relating to the profession of chemistry first appeared in Canada in 1921. In that year The Canadian Institute of Chemistry was incorporated under a federal charter. It was established as a result of the efforts of a small group of both chemists and chemical engineers, and its charter envisioned and empowered a range of actions devoted to the improvement of both the science and the profession of chemistry.

It is worthwhile quoting the primary Object of The Institute, as set out in its 1921 Charter: "To raise the Profession of Chemistry to its proper position among the other learned professions, so that it may attract a larger proportion of the best intellects and thereby secure a supply of trained chemists adequate to the growing industrial and professional needs of the country." It would be interesting to speculate, nearly sixty years later, on the extent to which succeeding generations have fulfilled this Object.

For the third and fourth decades of the century, the Institute co-existed, for all or part of the time, with several Canadian branches of the Society of Chemical Industry. This was an organization based in England, devoted primarily to furthering applied and industrial chemistry, and chemical engineering as it was then developing. The first meeting of what became a Canadian section of the SCI was held in Toronto in 1901. The Section was officially sanctioned in 1902. Other branches, which subsequently became essentially independent sections, were formed in Montreal, Ottawa, Vancouver, Shawinigan Falls.

While the constitution of the Canadian Institute of Chemistry made some general references to "chemists" as we have indicated, its by-laws did not contain the word "chemists"; and neither the constitution nor the by-laws made any reference to engineers, technologists or technicians even though the Institute's criteria would have qualified them as well as chemists for membership. From this we conclude that the principal concern in those days was for the recognition of a chemical profession and that sub-classifications of the profession were of minor consequence. In any event, membership in the Institute did not provide a legal right of professional recognition, because according to Canada's national constitution

(The British North America Act of 1867), the right to grant powers on professional interests is vested in the provinces.

It is interesting to realize that one of the early acts of the Canadian Institute of Chemistry was to formulate a code of ethics. This was in place in 1924. The Code could still be applicable today, but would hardly be written in the same style. May we quote the opening paragraph: "A member of the Canadian Institute of Chemistry—whether Fellow, Associate or Student—should exhibit the devotion to truth that characterizes the scientist, and the loyalty to his King and country, the courage, fairness and courtesy, that are the marks of the gentleman." Needless to say, this was written before there were any significant numbers of women in the profession.

The Canadian Institute of Chemistry did not however absorb or supplant local organizations as its founders had hoped. In the ensuing years, chemical scientists spawned a variety of local and regional organizations. They were concerned largely with the interchange of local information, and had only slight contact with each other. However, interchange increased, and in 1928 these associations, with some representation from the SCI and the CIC, formed the Canadian Chemical Association in 1928.

Throughout the thirties and early forties it became more and more evident that the efforts to strengthen the profession, and to advance the science, were hampered by the multiplicity of organizations. Towards the latter part of the Second World War, abetted by the growth in the chemical industry and in chemical research during that period, discussions began which it was hoped would result in a single organization. Many chemists and chemical engineers participated in these discussions, including such names as Lawford, Nicholls, Purdy, Littler, Bates Bartram and Lortie. The result of this ferment was the formation of The Chemical Institute of Canada in 1945. The federal charter granted at this time was based on that of 1921, but with some interesting changes.

Among the objectives listed in the revised charter are: To maintain all branches of the profession of chemistry and chemical engineering in their proper status among other learned and scientific professions; to encourage original research, develop and maintain high standards in the profession; to enhance the usefulness of the profession to the public; to look after and promote the well-being and interests of chemists and chemical engineers. While there are many other objectives listed, these indicate the importance attached to the professional aspects of the chemical sciences.

Like its predecessors, the CIC does not have powers to license, limit or discipline the profession, or otherwise to act in the way that a provincial organization might. Thus, although it has published and promulgated guidelines pertaining to the employment of chemists and chemical engineers, it has no legal responsibility or power for enforcing them. Its powers are limited to action within

its own operations.

Membership in the CIC is available to anyone associated with chemical sciences. Any man or woman who is actively engaged in the practice of chemistry and who has academic qualifications and experience beyond specified minimums may be elected a Full Member and thereby entitled to professional distinction by use of the letters M.C.I.C. after one's name. Others may be elected Associate Members (A.C.I.C.), or Student Members. In addition, a Member who has made a significant contribution to the chemical profession may be accorded further recognition by election to Fellowship status which is identified by F.C.I.C.; and special recognition may be conferred by election as an Honorary Fellow.

Honorary Fellows—		
FCIC (Hon)	10	0.1%
Fellows—FCIC	957	11.5%
Members—MCIC	5105	61.2%
Associates—ACIC	2263	27.2%
<b>TOTAL</b>	<b>8335</b>	<b>100%</b>

In addition, there are about 3500 Student Members.

Although the membership total is continually increasing, the percentage distribution pattern remains fairly constant. From time to time, there are suggestions that the Fellowship status should be eliminated or that it should be reduced by fewer elections to it, but there are equally vociferous arguments on the other side; and I sense no change in the foreseeable future.

The total membership is divided geographically into 28 groups identified as "sections." The largest has more than 1500 members and the smallest less than 20. Sections arrange programs which include meetings with speakers, seminars, symposia, field trips, etc.

The membership is also classified according to professional interest into 13 Subject Divisions and two constituent societies which also arrange programs for the benefit of their members. Each CIC member is permitted to participate in more than one of these classifications; and many do.

Operation of the CIC is controlled by a Council consisting of elected and appointed members who represent the groupings I've just described. Elected Councillors serve a three year term and one-third of their number is replaced each year. Council meets three times a year. Specific responsibilities for operations are assigned to a Board of nine Directors who are elected for a three year term with one-third being replaced each year. The Board usually meets five times a year. Day-to-day operations are the responsibility of a Head Office staff which is located in Ottawa, the capital of Canada. The chief-of-staff is the Executive Director who also acts as secretary of Council and of Board but is not a member of either.

In Canada, the people most directly involved with professionalism among chemical scientists are the CIC Board and Council. The nature and extent of their involvement is indicated by the titles and definitions of the

following Board portfolios.

*Professional Relations*—responsible for the professional interests of all CIC members, including: employment, immigration policy, professional ethics, professional benefit programs such as insurance, liability, and similar matters. In all professions, concern about liability is increasing throughout Canada, but no action has been proposed for relieving the chemical profession of its liabilities or insuring its members against risks of suits for damages.

*Chemists' Affairs*—responsible for matters relating to the profession of chemistry, professional qualifications of chemists (as distinct from chemical engineers and chemical technologists), accreditation of academic programs by which chemists may obtain professional qualification, relationships with provincial licensing bodies, and all other matters concerning chemists.

*Scientific and Technical Affairs*—responsible for national meetings, symposia, awards of recognition (medals and prizes) and any other scientific and technical activities of the chemical profession not provided for elsewhere.

*Education and Student Affairs*—responsible for education and all aspects of student activities of a chemical professional nature, e.g. membership in student chapters, conferences and symposia.

*Local Sections and Membership*—responsible for local section activities, programs, budgets, and membership activities.

*External Relations*—responsible for public relations policies and programs relating to the use and support of chemical science and technology.

*Publications*—responsible for the various publications of the CIC, including "Chemistry in Canada" and others.

Recognition of a chemical profession in Canada is, I believe, largely the result of the efforts of the CIC and its predecessor organizations. In this regard, two activities have major importance. One is the regular monthly publication of "Chemistry in Canada," a journal of professional, personal, industrial and scientific chemical news. Its readership totals over twice the number of CIC membership. The other major activity is the annual Canadian Chemical Conference which is in its sixty-second year and which is now attended by about a thousand chemical scientists from Canada and many other countries. In addition, various groups within the CIC (e.g. chemical engineers, organic chemists, etc.) arrange local or national conferences, symposia and other meetings from time to time each year.

The original concept of the CIC was a single, cohesive, professional association which would serve all chemical scientists in Canada and which would have two structural classifications: namely, Divisions based on geographic location, and Sections based on professional activity or interest. Affiliation with a Division and a Section was not re-

stricted by CIC membership status (e.g. MCIC, ACIC, etc.). From the beginning there had been suggestions that separate classifications should also be provided for different professional qualifications, i.e. chemists, engineers and technologists. Such suggestions were long resisted on the grounds that they would fragment and weaken the profession as a whole. By 1966 however, membership in the profession had grown sufficiently large that there was reason to believe the CIC could be strengthened by establishing a separately identified organization for chemical engineers as a constituent society of The Institute. Thus was born the Canadian Society for Chemical Engineering (CSChE) to serve the needs of chemical engineers in Canada. Six years later similar action was taken to create the Canadian Society for Chemical and Biochemical Technology. While there have also been suggestions that the needs of chemists could be better served by a similar specific organization for chemists, no action to do so has been taken or is planned at the present time.

Looking to the future, we expect that the number of chemical scientists in Canada will increase owing to continuing growth of our industrial economy and our population. Larger numbers in the profession will undoubtedly lead to more segmentation and more demands and needs for recognition of separate vocational categories in addition to chemical engineers and chemical and biochemical technologists. In this way the CIC might eventually become a national umbrella organization for a complete range of professional societies for different chemical scientists.

While keeping in mind the possibilities for segmentation of the profession on a vocational basis, a more urgent concern relates to segmentation through differences among criteria for legal recognition of the profession.

I said earlier that Canada has 10 political sub-divisions which we call provinces and that each province has its own elected legislature. This has special significance because in Canada, the power to make laws to recognize, regulate and control labor and professions is vested in the provinces; and in this regard, each province can act independently. Thus it is possible that one province could define a chemist as anyone who works with chemicals while another could limit its definition to a person with a Ph.D. in chemistry; and each might have entirely different criteria defining conditions of employment and for the rights of the profession to bargain collectively.

Legislation for some professions (e.g. dental, engineering, medical and teaching) has long been on the books of most provinces. In some cases the provincial laws are so similar that the provincial professional associations can co-ordinate their operations and function virtually as a national organization. In cases where differences exist between provincial statutes, professional status is affected and the mobility of professionals is restricted. This can create a significant hardship for a

professional who has reason to relocate from one province to another.

Over the years, various efforts have been made to obtain provincial legislation which would recognize and regulate the chemical profession. Thus far only one province has enacted laws providing such recognition and regulation, and one province has provided statutory recognition, but without regulatory power. In each case, the law was enacted in response to requests by chemical scientists within the province, who had moral support and financial backing from the CIC.

In 1926, the Association of Professional Chemists of Quebec was chartered with statutory authority to qualify its members as "Professional Chemists." The Association's activities were sporadic until after World War II when there was a strong resurgence of labor movements and there was much controversy within the chemical profession on such matters as government regulation, collective bargaining and other aspects of trade unionism. Finally in 1963, the Quebec government passed "An Act Respecting Professional Chemists." This created an organization identified as the Corporation of Professional Chemists of Quebec, and excluded members of CPCQ from the collective bargaining requirement of the Labour Relations Act. The Act gave them full professional status and protection, but without completely closing the profession. Protection-without-closing-the-profession was created by a statutory provision which provides that no person shall practice professional chemistry or use the title of "professional chemist" in the Province of Quebec unless he is a member of the Corporation, and that when more than one employee in the same industrial establishment may perform work which constitutes the practice of chemistry, it shall not be mandatory for more than the senior one of such employees to be a member of the Corporation. Further legislation in 1972, created *L'Ordre des Chimistes du Québec* and named chemistry as one of twenty-four professions subject to Quebec's Professional Code. This made it appear, with some exceptions, that membership in the Order is mandatory for the practice of chemistry in the province. Although the Order was conceived seven years ago, its strength has yet to be tested.

In the Province of Ontario, the Association of the Chemical Profession of Ontario has been established by a provincial act, but without regulatory or exclusive rights. The Association now has approximately 900 members, which is estimated to be about 30% of the total number of chemists in the province. It is currently preparing an application to the Ontario Government for legislative amendments to "close" and regulate the chemical profession in Ontario.

Progress in securing provincial legislation for the chemical profession is complicated by differences of opinion among chemical scientists on the needs for such legislation. Although there is general agreement on the

(continued on p. 7)

# LICENSING AND REGULATION OF CHEMISTS IN THE REPUBLIC OF THE PHILIPPINES

Dr. Remedios Abella Lim, Chairman  
Board of Chemistry  
Professional Regulation Commission  
Manila, Philippines

## Introduction

Let me mention briefly some relevant facts about the Republic of the Philippines. It is an archipelago of some 7,107 islands surrounded by the sea. Its total land area is 30 million hectares. There are about 43.59 million Filipinos as of 1976 according to a census taken nationwide, and the literacy rate has increased from 60% in 1948 to 83% in 1970. This makes the country the most literate of developing countries in Southeast Asia, second only to Japan in all Asia.

Primary, intermediate and high school are patterned after US schools, except that there is no eighth grade in the intermediate level. College is the same as in America. English is used from grade school to college. However, the native language, Pilipino (Tagalog) is compulsory in high school. For official functions, especially government, Pilipino (Tagalog) is used.

## Education and Training for the Professional Course in Chemistry

Chemical education and training are structured to suit Philippine social needs and conditions.

A four-year course for the professional (B.S. Chem.) degree or for chemistry majors (B.S.) with enough university credits for a solid foundation of the four basic chemistries, namely, inorganic, organic, analytical and physical. Advanced courses in the four are taken up in the senior year. An undergraduate thesis or research work of no less than six university units is required before graduation. Courses in biochemistry, environmental chemistry and other sophisticated subjects are also studied in the Third or Senior years. Chemical jurisprudence is also taken up in the senior year. The faculty are mostly MS and Ph.D. degree holders from the U.S. and German universities or schools.

There are presently 28 chemistry schools in the country, granting or giving professional chemistry degrees. Two are State Universities, one in Metro Manila, the University of the Philippines, and the other located in the Southern region.

Training in College consists of the follow-

ing: In the senior year of the professional course a research project including laboratory work thereon, and a thesis are required—to train the student for the future practice of the chemistry profession. A minimum of ten field trips from Junior to Senior year—to industrial chemical plants, laboratories and government. A six months apprenticeship assignment to government agencies.

Professional chemists in academia comprise 25% and are mostly those with M.S. and Ph.D. degrees or M.S. with majors in chemistry. *They may, or may not be licensed.*

Fifty per cent of chemists are working in industrial establishments. The registered ones are highly paid. The unlicensed have very low remuneration—most of them are hired on temporary or probational basis (until they are licensed). Unlicensed chemists are very few, about 1% to 2%, and are also those who have failed in the licensure examinations for as many as three or four times. Some work as laboratory technicians until they have passed the government licensure exams.

Government employed chemists comprise the remaining 25% and are employed under the same conditions as stated in industry.

## The Professional Practice of Chemistry

The various exciting professions in the country and their practices are extensive, practically covering all social and economic life of the country. There are more than 1/3 of a million professionals, which comprise a distinct segment of Philippine society—bearing the heavy portion of responsibilities in, and the burdens of, nation building and development. To legally permit the required functions for a given profession, there was an indispensable need to first license and then regulate the professional and occupational practices in the country. In view of this vital need and to make it more effective the practice of 33 professions were placed under government regulation, to protect public interest by insuring fully competent professional services rendered to the people. For the practice of chemistry, two laws were enacted—namely, the *Chemistry Law* (Rep.

Act 754), approved by Philippine Congress in 1952; and Presidential Decree No. 223, approved by the President of the Philippines, in June, 1973.

## The Chemistry Law

1. The creation of a Licensing Agency or body.
2. Nationwide examination and registration.
3. Penal provisions for violations of the law.
4. Foreign reciprocity and practice.

A three-man board—a Chairman and two members—is appointed by the President of the Republic of the Philippines upon recommendation of the national Professional Association of Chemists, possessing these qualifications: a citizen at least 30 years of age; a duly registered chemist in the Philippines who has at least 10 years practice or experience in chemical work previous to the appointment, with at least an M.S. degree in Chem.; must not be a faculty member of any school, college or university where a professional course in chemistry is taught, nor have any pecuniary interest in such institutions. The term of office is for three years or until appointment of their successors.

The Licensing Board is authorized to administer the provisions of the law, to issue, suspend, revoke, and reissue certificates or registration for the practice of chemistry, and to administer the respective professional oaths. The Board studies the conditions affecting the practice of chemistry in all parts of the country, as well as courses in chemistry leading to the Baccalaureate degrees, and whenever necessary recommends necessary measures or takes appropriate action thereon, in order to improve and maintain high ethical, educational and technical standards in the practice of chemistry. For these purposes the Board may conduct inspections or visits of chemical plants or establishments and schools of chemistry.

The board determines or prescribes minimum requirements for the admission of candidates to the licensure examinations. It determines the scope and prepares the contents of the examinations (for chemists and for laboratory technologists); scores and rates

the examination papers and determines the appropriate passing general rating; then submits the examination results to the PRC within 120 days after the last examination.

The Board investigates violations of the law and rules and regulations promulgated thereunder—for this purpose it may issue summons, subpoenas and subpoena duces tecum to violators or witnesses and compel their attendance to such investigations and hearings.

The following persons may be exempted from registration:

a) Chemists from other countries called in for consultations or for a project not requiring more than 6 months residence in the RP in any twelve month period, provided that they are legally qualified to practice in their own state or country.

b) Foreigners employed as technical officers, professors or consultants in such special branches of chemistry as may, in the judgment of the President of the RP, be necessary and indispensable for the country, provided that they are internationally recognized experts and that they do not engage in private practice while in the country.

c) Foreign nationals attached to international bodies or organizations assigned to perform certain definite work in the RP, provided that the practice shall be confined to such work only and should limit their practice only to the specific work assigned.

## CANADA—cont'd

desirability of recognition, attitudes toward regulation vary greatly. Some members would like the chemical profession to be closed and closely regulated in much the same way as the legal and medical professions. Others are equally strongly opposed because they do not regard statutory recognition as an important determinant of their success or life in general, and they consider any mandatory regulation of their profession as an undesirable restriction of their individual freedom and a handicap for upward mobility in their career. Such neutral to negative attitudes are most prevalent among chemical scientists in industry. They generally prefer to be identified with management white collar employees rather than with blue collar workers especially if the latter are party to any kind of collective labor agreement.

At the present time in Canada, inflation, unemployment and political issues at the federal and provincial levels are major concerns across the nation and relatively little consideration is being given to recognition or regulation of the chemical profession. In due course however the focus of attention will shift, and further actions will be taken to obtain recognition and regulations of the profession. If each province exercises its right to act independently without consider-

## The Nationwide Licensing and Registration Program

To be considered a member of the chemistry profession, as per the two professional Laws, one must have at least a Baccalaureate degree in the professional course, of not less than 60 university units in chemistry; passed the government licensure examination and been a holder of a certificate of registration; and been listed in the Directory of Professionals. The licensure examination is a test for professional proficiency and ability. It is a test of technical skill developed and acquired over years of education and training. Certification is the authority (by the Philippine Government) given a chemist, chemical technologist or chemical technician to practice the profession or occupation.

The qualifying examinations for chemists and chemical technologists are written examinations covering subjects prescribed by the Board on a nationwide basis, generally given in Manila, every six months. Chemists must be of Philippine citizenship, good moral character, at least 21 years of age, and hold a Baccalaureate degree in Chemistry (B.S. Chem.) or its equivalent degree of not less than four years, with 60 University units of Chemistry.

Chemical technologists must have completed the regular non-degree course of not less than three years leading to the certificate

in chemical technology or its equivalent, with at least 30 academic units in chemistry covering the four basic areas enumerated for chemists—but 10 units of which must be in analytical chemistry.

A written exam is not required of chemical technicians, but they must be high school graduates and submit a sworn statement of 5-year experience of practical routine laboratory work, under the direct supervision of a licensed chemist. Chemical technicians, after fulfillment of these requirements are issued certificates of registration.

Presidential Decree No. 223 created a three-man Professional Regulation Commission. This commission was created to effectively enforce the laws regulating the various professions, and to coordinate and supervise the various licensing boards.

In conclusion, I would say that the two regulatory agencies instituted by the government have done a lot with regard to the problems that have confronted the practice of chemistry in the country. They may not be the complete solutions to all the existing problems but they will go a long way toward that end.

Whatever specific forms and measures are adopted by other countries, I envision them to be ones that can enhance the development of consciousness of professional relationship which should be an extensive undertaking in all countries.

ing others, the result could be severe fragmentation of national identity and strength. This would be unfortunate for both the profession and the public. As the national association of the chemical profession, The Chemical Institute of Canada recognizes an obligation for continuing to work closely with chemical scientists in all provinces to

promote standardization of legislation with chemical scientists in all provinces to promote standardization of legislation and administrative procedures relating to recognition and regulation of the chemical profession and thereby ensure its unity and strength. We see this as our major challenge in the profession during the coming decade.

I am a member of the American Chemical Society. Enclosed is \$4 to cover dues through December 31, 1979.

Signature \_\_\_\_\_

Printed Name \_\_\_\_\_  
Last First

Address \_\_\_\_\_  
\_\_\_\_\_

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