



NATIONAL CHEMISTRY WEEK

COORDINATORS HANDBOOK

The Chemical Institute of Canada
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Introduction

National Chemistry Week is the major public outreach activity of The Chemical Institute of Canada (CIC). Its scope and sponsorship have expanded annually and it is now one component of the CIC's outreach program Public Understanding of Chemistry. The success of NCW depends on you. We can work together, chemists, chemical engineers and chemical technologists to bring our message to the public that chemistry is everywhere and that it is indeed vital to our future.

The National Chemistry Week (NCW) Resource Book is designed to help Local Sections, universities, Student Chapters and other interested groups organize and stage effective activities and events to celebrate chemistry across Canada.

To assist you with the task at hand, the Resource Book contains a list of suggested activities that were successful and well received in previous NCWs and tips on how to initiate and organize your own events. I wish to thank all those who shared their thoughts and ideas with us. Now, here is your opportunity not only to build on past successes but to implement your own ideas. Take advantage of the Resource Book, but also, use your imagination and creativity to develop new activities and novel approaches to stage events. We need your good ideas to enhance the impact of NCW on the general public and to expand and improve the resource material.

National Office is anxious to assist you through the Awards and Local Sections Manager (publicunderstanding@cheminst.ca). Please do not hesitate to contact her if you have questions about conducting events or if you have ideas to share with others in the chemical community.

Our goal is to have 100% participation from Canadian Local Sections, universities, colleges, technical schools and Student Chapters in NCW activities. Only you can help us to achieve this goal by making NCW such a resounding success that volunteers, organizations and the general public from every corner of Canada will be lining up to share in the excitement of this celebration of the chemical sciences.

Our sincere thanks for your commitment and dedicated, hard work and best wishes for a successful NCW.

SCIENTISTS IN THE SCHOOLS

Imagine the deep personal satisfaction felt by a scientist who makes a discovery. Such satisfaction is quite independent of other rewards. If young people could experience some of that joy in their school years, they would retain a lifelong appreciation of science and technology. It has been suggested that scientists, engineers and technologists spend one day per month in the schools doing lecture-demonstrations, hands-on experiments, consultations on student experiments, judging of science fairs, conducting science games, arranging laboratory and plant visits and providing chemical samples, models and literature. National Chemistry Week is a good time to get started.

The Do-It-Yourself Chemistry Project of the Vancouver Section of The Chemical Institute of Canada was a very successful one. The late Dr. Douglas Hayward, FCIC, honorary professor of chemistry at the University of British Columbia visited more than 100 elementary schools and wrote a regular column in community newspapers in British Columbia describing chemical phenomena. The Vancouver Local Section, with financial assistance from Science Culture Canada, the Chemical Education Trust Fund and the Canadian National Committee of IUPAC, produced a kit to assist others in undertaking classroom visits. The kit included a video of a classroom demonstration and a booklet of experiments. Some of these experiments are still available through the NCW website under NCW experiments (www.cheminst.ca/ncw/experiments).

Contact with the school is often initially made through a teacher or parent but it is wise from the outset to ask that more than one classroom be visited to make the trip worthwhile. This will bring the school principal or administrative officer into the discussion. It is recommended that a letter of invitation from the principal be obtained to formalize your visit since you will be representing your colleagues in the CIC. This also gives you coverage under the school insurance plan.

The costs involved with local school visits are minimal (transportation, simple equipment) and should be covered by the group organizing the event, the individual scientist, engineer or technologist or his or her employer. Principals receive many offers of visits by people who want to be paid. The fact that visits sponsored by the CIC costs the school nothing is very impressive. The sponsorship by the CIC is also important for professional credibility since the visitor is often not a certified teacher.

School visits should be given maximum publicity by the organizers. When advised of visits a few days in advance, the media have invariably responded with courtesy, kindness and accuracy. A half-page news release stating the main facts of the visit should be sent to editors and producers. Published pictures of students doing experiments, when posted by the principal on the school bulletin board or on the school Web site, give an enormous boost to students, teachers, parents and the community.

Planning a classroom presentation is similar to making an effective PowerPoint presentation. The necessary information is laid out and then every possible bit of extraneous matter is removed to give the clearest message possible. Demonstrations should be rehearsed, taking into account every possible variable, and at least an equal number of backup experiments kept in hand.

The visitor should be 'self-contained', even have a bottle of water, plastic catch basin and towel in the supply case. This helps to overcome the idea that chemistry can be done only in a laboratory with special equipment. Aim to need only a table, wastebasket and blackboard to be provided in the classroom.

Safety is very important. The importance of rehearsing ahead of time with every possible change of variable cannot be stressed too often. *Minimum Safety Guidelines for Chemical Demonstrations* developed by the Chemical Education Division of the American Chemical Society are available at <http://chemistry.org/ncw>. The *Laboratory Safety Handbook*, published by the Ordre des chimistes du Québec and the CIC is a useful reference for general safety procedures.

The experiments. Complete scientific literacy is impossible since even scientists do not share a common vocabulary. What we can strive for is familiarity with science in everyday life. New concepts should, if possible, be related to our bodies since that is the way we begin learning. Brevity and three and four-letter words are best. Technical terms may leave incomplete or misleading impressions that students may later struggle to unlearn.

* References to magic and wizards should be avoided. Children (and their parents) can easily be misled. Take the trouble to explain the chemistry involved in spectacular reactions to dispel the magical image.

Use a personal title that describes your work activity such as industrial chemist, chemical engineer, chemistry professor, chemical analyst, mining technologist, etc. It is best to avoid doctor with its medical connotation.

Accentuate the positive! When environmental problems are discussed, always include hopeful trends and suggest actions that the family can take to help solve the problems.

It is useful for the visitor to keep a pocket diary and promptly enter names of teachers, trip length, class sizes, etc. Systematic record keeping is not lost on students or teachers. The low traffic period between 10:00 a.m. and 3:00 p.m. is the preferred time for visits. Parking for visitors is usually clearly marked and it is important to report first to the school office. Cheerful guides are plentiful. Some schools issue visitor passes as a security measure.

A Periodic Table poster is an ideal memento of the visit for the classroom which is available from National Office. The Table unifies science and technology and our objective should be to make it as familiar to every citizen as the calendar. First-year chemistry and physics textbooks collected from academic colleagues can also be distributed to school libraries with an inscription commemorating the visit. School librarians can be informed of the *Merck Index* which describes 10,000 chemicals and may be consulted by phone at the public library.

Teachers and particularly student teachers should be invited to your laboratories and plants on a regular basis and they should be encouraged to keep in touch by newsletters and personal contact.

Industry, Science and Technology Canada (ISTC) commissioned a study in the fall of 1990, which showed that young people are ready to make career decisions at the early age of 12 to 14 years. You may want to keep this in mind when planning school events for NCW.

Some groups who organized school visits during NCW suggest that schools or teachers be contacted before the end of June since they prepare their lesson plans during the summer. A follow-up with the teacher is a must in September. An alternative is to write to the teachers making sure that your letter arrives at the school during the last week in August. This should also be followed by a personal contact early in September.

Here is a description of a few activities organized in or for schools during past NCWs.

Memorial University students and staff made visits to elementary schools with a presentation on the properties of carbon dioxide. They also invited the local television station to tape the visit and this footage was presented on local prime time TV news as well as on the national CBC News World network. This was successful as children enjoy good visuals at any time. Memorial also sent teachers ideas for classroom projects to use during NCW.

An Interdiscipline Poster Competition - Crofton House School in Vancouver had students preparing posters in their art classes which had chemical themes such as crystals incorporated into them.

Experiments from CIC's *Wonderful Water*, *Discovering Chemistry* and *Exploring Chemistry* booklets are available on the Web at www.cheminst.ca/ncw

The National Crystal Growing Competition

The National Crystal Growing Competition is held annually. High school students and now, their teachers are invited to grow the largest, clearest SINGLE crystal in a five week period. A regional representative from a Local Section or university is asked to contact the schools and coordinate the event. Information on the 2007 National Crystal Growing Competition is available at ncwsnc.cheminst.ca/crystal/xl2007.html.

National Office will supply you with Crystal Champ T-shirts for your top team of crystal growers. Please contact the Awards and Local Sections Manager at publicunderstanding@cheminst.ca to request these shirts, sponsored by BASF.

PUBLIC DISPLAYS AND DEMONSTRATIONS

Organization of public displays, including hands-on experiments, is a useful method of communicating information on science to the general public, including children. Such a project can be organized by a Local Section, Student Chapter, university department or other group. This is one activity that can be successfully undertaken in collaboration with colleagues in other disciplines. The information and suggestions that follow have been provided by R.H. Pallen, MCIC, of Concordia University, who coordinated an exhibition involving all the science departments at his university for Semaine des sciences and the Ottawa Chapter of the Sigma Xi which organized a successful display in March of 1989 at a shopping mall in Ottawa.

Committee

For the university-wide event, each department head was asked for the name of a contact person; it was usually the technical officer who has access to the equipment and knows the students.

The Ottawa Sigma Xi group established an ad-hoc committee with members representing various disciplines. A high school teacher was asked to join the committee to provide input on the science curricula in the local schools.

A committee for a purely chemical event could involve specialists in various areas of chemistry.

Guidelines

- The exhibition should be run by enthusiastic people. Students are excellent candidates.
- The topic must be made understandable in everyday terms.
- The exhibit should involve 'hands-on' experience.
- If possible, the experiments should comprise a unified exhibit with a common theme.
- Chemistry experiments must illustrate some principle and explain something related to everyday experience. They should not be strictly sensational.
- All experiments and demonstrations must be safe for operator and audience, must have been tested by the prospective demonstrators and be foolproof when carried out repeatedly in a public place. Many malls now restrict such things as the use of helium for balloons and may have other safety restrictions.
- If possible, experiments should involve the audience.

Posters

The positioning and size of any posters used in the display are important.

The content of the posters should be carefully considered.

Acknowledgements

All sponsors, donors of equipment or funds should be acknowledged at the exhibition.

Location

For public events, do not hold the event at a university/college; it is unfamiliar to the public and visits there are not usually part of their routine, unless part of a full institution Open House.

Community, cultural or municipal centres are the best places to set-up public displays because they get a high volume of traffic and families are used to visiting these buildings. Shopping malls are also excellent venues, but you must book well in advance as October is the beginning of Christmas craft exhibits. Thursday evenings and Saturdays are the best times to guarantee high traffic flow.

Shopping Centre: contact the shopping centre manager well in advance (8 months), requesting space and asking for information on exhibit type, insurance requirements. Insurance should be arranged with the CIC National Office on an individual basis. Don't let this item deter you from holding a public exhibit. For more information, contact publicunderstanding@cheminst.ca.

Cultural Centre, Library: Choose a location that the public are in the habit of visiting for other events, e.g. libraries, art exhibits, etc. Concordia University has held its events at Stewart Hall, a cultural centre in Pointe Claire, QC. The Centre helped with the advertising and other expenses.

Logistics

Experiments should be demonstrated to an appropriate group (e.g. at a Local Section meeting) as soon as details have been worked out. A trial should be staged three to four weeks in advance at a high school or similar location, to verify the operation of the experiments and work out any problems.

The logistics of setting up and manning the event should be reviewed in detail. Determine the layout and assign specific exhibits to specific locations. Arrange for delivery of tables and other materials. Establish with the facility the appropriate time for set-up. Ensure the committee arrives on time. Appoint someone to be responsible for a final inspection.

Publicity

Flyers distributed to elementary and high schools, newspaper and radio interviews, free radio announcements on community news programs and posting on Web sites such as the CIC's NCW Activities page are all recommended.

Costs

Expenses include: insurance, rental of tables and poster boards, postage, mailing, equipment and supplies.

Evaluation

Local Sections have developed evaluation sheets that they distributed to the attendees. These forms were also used as entry forms for contests.

The estimated attendance at the shopping centre exhibit was found to be approximately 1,000 persons during an 8.5 hour day, 65 % adults, 30 % children, 5 % youth (late high school, early college). There were a larger number of the latter group in the mall but they did not visit the exhibit.

Sample Demonstrations and Experiments

Chemistry experiments used by the Concordia group:

- SLIME! This is the number one experiment carried out by our volunteers
- Soxhlet extraction of plant components using cabbage, spinach etc.
- Chromatography of spinach extract to show different chlorophylls.
- pH measurement, using pH meter, pH papers, and indicators, of household products -- lemon juice, soft drinks, water, other juices, vinegar etc.
- Automatic and manual acid/base titrations.
- Effects of liquid nitrogen on substances such as bananas, rubber etc. (demonstrates states of matter).
- Molecular modeling on a computer -- PC modeling program -- of such things as alcohol, aspirin, heroin, vitamins.
- Hazardous/toxic chemicals -- information about the toxic nature of various chemicals (handout, pamphlet), dummy examples such as flour or icing sugar were used to represent other compounds showing the quantities that are lethal.
- A computerized quiz (composed by students).

Preparing Demonstrations

Public demonstrations of some of the most visual effects of chemistry have always been very popular. Dr. Douglas Hayward, FCIC, gave in-class demonstrations for a number of years. His 'Do-It-Yourself Chemistry' video has been extremely popular. A separate booklet, describing different experiments, is also available.

Dr. David Harpp, FCIC, Dr. Ariel Fenster, MCIC, and Dr. Joe Schwarcz of McGill University have been dealing with Chemistry and Society for over 20 years. They have been performing their chemistry shows across the country. Visit their website at <http://www.mcgill.ca/chempublic/>.

Chem13 News, produced by the Department of Chemistry at the University of Waterloo, might be of interest to you. Every issue contains interesting ideas. For additional information contact *Chem13 News*, Department of Chemistry, University of Waterloo, Waterloo, Ontario N2L 3G1; Tel: 519-885-1211, ext. 3701. A one-year subscription is \$22; \$42 for two years.

Information and guidelines on performing demonstrations can be found in the section **Scientists in the Schools**.

EVERYTHING IS TOXIC: IT DEPENDS ON THE DOSE

Dr. M.G. Hogben, Dept. of Chemistry, Concordia University, Nov. 7, 1984

Paracelsus (1493-1541) said it 500 years ago: "All substances are poisonous; there is none which is not a poison. The right dose differentiates a poison and a remedy."

Each of the following common household chemicals, if ingested (eaten or drunk) within a one or two hour period, is said to be able to kill the average 2 year old child weighing about 23 lbs. (10 Kg). **Often far less can kill or seriously harm even children who are strong and healthy.**

Alcohol	100g or about 1 1/2 cups of vodka, gin etc.
Salt	37g or 2 oz.
Sugar	300g or 1/2 lb.
Caffeine	30g or 1 oz; equiv. to 20 cups of coffee, tea or 30 colas
Baking Powder	(50% tartrate; 50% sodium bicarbonate) 10 g (La. p 316)
Crushed Fruit Seeds	(apple, peach, apricot, plum) 5-25 seeds can be fatal through the slow release of cyanide into stomach (La. p. 277)
ASA	(Aspirin) 2g (6 tablets);
Phenacetin	(Tylenol) 10 g (La. p. 328)
Cigarettes	(2 g tobacco) 20 eaten, not smoked!; actually 2 cigarettes have enough nicotine to be lethal but absorption is too slow.
Matches	strike anywhere (pot chlorate) 50-100 match heads (La.p.407)
Weed Killer	(potassium chlorate) 2 g.
Nail Polish Remover	(ethyl acetate or acetone) 100 ml or three 1 oz. Bottles
Moth Balls	(naphthalene) 2 g. (La.p.21 1)
Deodorizer Cakes	q)-dichlorobenzene) 5 g. (La.p. 178)
Kerosene/Turpentine	+ other petroleum spirits: 10 mls. has been fatal
Fuel Tablets	(metaldehyde) 1 g. (La.p.202)
Fondue Fuel	(methyl hydrate) 50 mls. or 1/4cup -- note: small amounts make you irreversibly blind
Latex Paints	50 ml (U.p.318)
Oil Based Paints	Equiv. to kerosene
Detergent	(dishwashing, laundry, shampoo): max. non-lethal 1g (La.p.315)
Bleach (Javex)	15 ml. (La.p.314) as corrosive as same conc. lye; severe irritant but no chronic effect
Lye	(Draino or Liquid Plumber) 5 g. but terrible sub-lethal effects

or even pure **WATER!**: a gallon (force-fed over a period of one hour) is lethal. For comparison, the lethal dose for well known 'poisons' such as cyanide and strychnine would be about 20 mg. for a 2 year old.

NOTE: This information is not to be used to diagnose or to treat anyone; it is merely to warn! If you think your child has been poisoned, then phone a hospital and give them your suspicions. There are Poison Control Centres to assist you as well.

References: Most of the references on this sheet have been taken from the Lange Handbook of Poisoning by R.H. Dreisbach. For example: La. p.328 means page 328 of the Lange Handbook

LABORATORY TOURS

To develop a better understanding of chemistry by school children, one Local Section decided it might be useful to expose them to various kinds of chemical laboratories. The coordinator of these visits provided the following information.

Organizational Details

A letter was written to the Directors of all local active chemical laboratories in the Federal Government, the universities and private industry. The various institutions were requested to participate in **National Chemistry Week** by opening their laboratories to school students.

Most laboratories responded quickly and it became clear that nearly all who were approached were willing to help. Laboratories were asked:

1. the age group of students who would benefit from the tour; N.B.: All laboratories specified high school students.
2. the optimum size of the group.
3. a description of the activities of the laboratory.
4. most suitable time and day.

Since 9/11, security issues have tightened restrictions on tours so additional details may need to be provided, including names for security checks.

It was stressed that we did not wish to place excessive burdens on laboratories because we wished them to participate in **National Chemistry Week** again in future years.

From the information assembled, a prospectus was drawn up and circulated to the scientific consultants of the various local school boards. It is best to do this before the summer vacation. It is also helpful to work through the Science Teachers' Associations, as well as the science consultants.

Teachers were asked to contact the coordinator who booked the tours on a 'first come; first served' basis. The coordinator kept in touch with the participating laboratories and apprised them of the schools and teachers involved, so that any detailed arrangements could be made between the teachers and the laboratories directly. A follow-up with the teachers is important the week before the scheduled tour.

After the tours, the laboratories were thanked for participating, and asked for their comments on how the tours might be improved.

Results

Of the 14 laboratories included in the program, 10 received visits and 62.5% of the available tour places were booked. **During National Chemistry Week, 444** high school students from the region visited a chemistry laboratory. From the comments received from various laboratories, students and teaching staff, the tours went very well.

Another Local Section organized a series of tours to local industry open to high school students and the adult public. They advertised the tours in the city newspaper. The industrial tours basically followed the same organizational guidelines as the laboratory tours.

One drawback mentioned is the fact that in both types of tours the hosts do not wish students who are younger than high school age to participate and they prefer to have small groups (10-12). Make sure you ask about the suggested number and type of participants when approaching potential

hosts. You could suggest that if a class is too large, one group can tour, while the other group attends a briefing and question period on the company or the laboratory.

SPEAKING OF SPEAKERS

There is a lot of interest in guest speakers for public lectures. However, much needs to be thought about before ever lifting the telephone to extend an invitation.

Topic

There is no **national** theme for **National Chemistry Week**, but you can come up with your own. Some points to ponder:

- Does your proposed topic 'fit' with the theme?
- Is the topic of interest in your community -- in other words, is there a potential audience?
- Is the topic sufficiently interesting to draw them away from home and hearth?
- Do you have a specific speaker in mind?

Your Audience

- Will your topic appeal to everyone or to a specific audience -- i.e. of interest to parents; students; chemists; environmentalists; pharmacists; homemakers; youth groups such as Cubs or Brownies. Your guest speaker will need to know what kind of an audience she/he will be addressing.
- What size of audience are you planning (hoping) for?

Potential topics: Food; climate change, waste disposal; women in chemistry and chemical engineering; green chemistry, wine/beer making; fossil vs. synthetic fuels; allergies; pesticides. What are some of the 'burning issues' in your community? Listening to your local radio talk shows or a glance at the Letters to the Editor pages of your local newspapers or on the Web will provide some clues. What are your local industries, universities and hospitals concentrating on? Obviously there will be some local experts available to speak on their 'pet projects'.

Places to look for expertise:

- Your local industries. Their Public Relations Departments can suggest a potential speaker. Some advantages: Probably no cost involved; the speaker is likely to be someone from your own community, with a feel for 'hot issues' in the community.
- Your local university. What are some of the innovative research topics being studied? There are likely to be professors or graduate students anxious to talk about their 'pet projects'.
- Conference programs. Participants of conferences have a lecture already written up. They are often interested in presenting their topic a second time and could cater it to your audience. There are abstracts for many CSC and CSChE conference programs on the CIC's Web site.
- If your target audience consists of high school students, consider inviting undergraduate' chemistry, chemical engineering or chemical technology students to speak. Besides the enthusiasm and energy they will have, their closeness in age to the audience will provide an excellent role model for the students.

- Retired chemists and chemical engineers in your community can be a powerful resource. Their commitment to the field has already been proven and they have unquestionable expertise upon which to draw.
- Your own colleagues at work or involved in the Local Section may have suggestions on potential speakers and topics.
- The CIC's Past Officers and Directors Advisory Committee (PODAC) have several members who have indicated a willingness to speak on various topics. Contact CIC National Office at info@cheminst.ca for suggestions.
- Does your university alumni publish a directory of "Where are they now?" indicating where former graduates are working? Perhaps one of them would be interested in speaking about career choices that are available to chemists, chemical engineers and chemical technologists.
- Does your community have a Science Centre? If so, why not approach them for suggestions?

So, now you have a topic; you know the kind of audience (and its size) that you want to address and hopefully you have a lead on a couple of potential speakers. The rest is easy - book a hall; publicize the event and the people will turn out. You will know from reading the section on **Working With the Media** that there is more to it than that. You will require good advance planning, persistence and persuasion to attract an audience.

- Finally, consider other options - panel discussions; radio talk shows; video presentations; question and answer sessions for students.

STUDENT ACTIVITIES

Students can be a part of NCW by participating in awareness activities.

Student Chapter members could get involved by staffing an Open House in the chemistry, chemical technology or chemical engineering department of their university or college. There are also opportunities for multidisciplinary events here. A tour of the department might feature interesting chemistry demos to capture the viewers' imaginations. Others might prefer to set up displays in a mall or community centre for the general public.

Ideas include a chemistry quiz, in which high school students competed in "Jeopardy" fashion, featuring questions about chemical structures, names and events in chemical history. Book prizes could be given out to the winners, also T-shirts stamped with chemical symbols.

Students might be interested in making industrial tours during the week, or in visiting research labs. In turn, they themselves might make the effort to visit elementary and high schools locally, to give presentations on the everyday chemical aspects of such topics as pollution prevention or food chemistry or to tell others in their institution from other departments about chemistry. Visually exciting messages coming from youth would, no doubt, make an impact on how chemistry does affect the lives of everyone.

The Department of Chemistry at York University (Toronto), announced during NCW, the inception of The Chemical Hall of Fame, in recognition of those chemical substances and materials that have provided benefits to society and to honour the inventors/discoverers. Up to three inductions to The Chemical Hall of Fame are to be announced annually. Launches of National Landmarks have also taken place during the week. The Hall of Fame and Chemical Landmarks are listed at www.cheminst.ca/publicunderstanding.

Because National Chemistry Week is all about communication, students and their teachers may want to expand further by use of the media. Local cable TV stations are often receptive to giving publicity to youthful projects. In Victoria, a phone-in show, in cooperation with the university, was an instant success, dealing as it did, with topical questions like what to put down the sink! Newspapers could publish student essays on related subjects - with photos and the Web is an excellent venue to communicate your activities.

By offering a challenge to students, it is hoped that many will want to pursue careers in chemistry and will find encouragement in its beneficial aspects. In trying to raise the image of chemistry, emphasis should be on the safe, rather than on the spectacular.

During NCW, Student Chapter members visited elementary schools and high schools to perform demonstrations or to speak to the students.

- Co-op students of one Chemical Technology Program hosted a lecture. The students followed the lecture with a buffet that they had prepared themselves.
- Student Chapter members have sold pictorial Periodic Tables, poster size, for approximately \$5. These were left in schools after a visit and were very much appreciated. The Student Chapter used the money raised to fund some of their activities.
- CIC Student Awards Night is a way of recognizing students for their hard work. The Manitoba Local Sections hosts such a night annually for students from three universities, followed by a lecture.
- Students from a university may wish to present to students of the colleges the advantage of pursuing chemistry at university.

WORKING WITH THE MEDIA

One of the most important jobs to do, in preparation for National Chemistry Week, is to get the message out. You need to let your public know what you are doing. More than just the local community can be interested in what you have planned: Local Section members, science teachers in the local school boards, members of the local business community are all potential targets.

The Media

Media relations are an area that does not just begin with National Chemistry Week. It needs to be handled on a constant and continual basis. Once contact with the media has been established, maintain it. Send out announcements of all Local Section activities, especially anything involving children or students. Award nights are good, for example. The media, particularly newspapers and television, like pictures.

When you are trying to get media to cover some of your activities, remember that NCW is not necessarily a "news" item, but more of a public awareness exercise. Aim at getting coverage in your community newspapers, on your local television channel and cable television. Major ones attend if other news is slow that day.

Whom to Contact

Most Local Sections are located close to a university or college that may, or may not, have a public relations or communications office. If so, ask for a copy of its media list. Often, the office can be of assistance to you in other areas: helping to write press releases, making telephone calls, sending out media kits.

If you need to prepare a media list from scratch, the first step is to use the Web or a telephone book to find the addresses and telephone numbers of the local radio, television and newspapers. Don't forget to add the cable TV company and any weekly or community newspapers. Another possibility is the Canadian Press news service. There are branches all across the country and it is possible for a story to be picked up all over Canada.

Once this has been done, take the time to call and find out the name of the city or news editor. Check to see if there is a science reporter, an environmental reporter or a medical reporter and ask whom that person is. Whenever possible start with the reporter first.

Then add to the list any radio or TV talk shows that are community oriented. In these cases, the person you want is the producer.

There is also the **Canadian Science Writers Association**. Members are spread all across Canada and there are probably several members in your area. If you are interested in finding out more about the CSWA and the names of members you can get in touch with, contact CSWA, Box P.O. Box 75, Station A, Toronto ON M5W 1A2; Tel/Fax: 1-800-796-8595; E-mail: office@sciencewriters.com or visit www.sciencewriters.ca.

How to Make Contact

The most familiar way of getting your point across is through the news release. Please see the section that follows on Writing a Press Release.

The Hook

One way of bringing attention to National Chemistry Week is to propose a special event or activity (a hook) that will be started during the week and then continued on. A national launch of NCW in Montreal featuring Joe Schwarz brought in TV and newspaper reporters. Not only did it bring National Chemistry Week to the public's attention, it gave attention and media coverage to chemicals whose beneficial contributions may be overlooked in the current unfavourable atmosphere.

Timing

It is never too early to start making contact with the media. As soon as possible, prepare a press release announcing National Chemistry Week in your area and some of the activities you have planned. It is also a good idea to give some background on the event, including what happened last year. You can even call the media before sending this initial press release so that they are aware of what is being sent and you will know about that particular person's level of interest.

Send a reminder during the summer or fall, giving any additional information that has become available. Two weeks before the event, send out a final press release, giving all the information available. If your press release is sent too early, it tends to get filed away or be discarded. Follow it up with a telephone call just days before the event as a final reminder. A telephone follow-up to your mailings ensures that the appropriate person has received your information and that it has the intended effect - actual coverage. See the information that follows on **How to Write a Press Release**.

Be prepared to answer questions about technical subjects in a non-technical manner. As much as possible avoid jargon: if a technical term must be used, take care to explain what it means and why you have to use it.

If a talk is to be given during National Chemistry Week, you have the option of sending a copy with the press release or asking the media to let you know if they want a copy. On a cost basis, the latter course is preferable but makes the whole process as easy as possible for the press. They will appreciate it. It's a good idea to see if the speaker will give press interviews before or after the speech.

If possible, call all the local media about one to two weeks before the event to see if they still have the material you sent them, if they need more information and whether or not someone will be attending.

Television is the most effective method to get your message across. Getting a short news item on the six o'clock news can provide a lot of exposure. Television producers and editors are particularly fond of a story with pictures: anything involving children, local dignitaries and a visual display with impressive special effects.

When thinking about television, don't forget your local cable company. Not only are they usually interested in community events, but they frequently need all the programming help they can get. The North Saskatchewan Local Section had considerable success with its local cable channel several years ago. The Section has some 10 chemistry videos, acquired from a number of sources, including industry and professional societies. These videos were played on the local cable company several times during National Chemistry Week, free of charge, and seem to have made an impression on the public. The Section had videos from the American Chemical Society, the American Institute of Chemical Engineers and several large chemical companies, as well as the Vancouver Section's 'Do-It-Yourself Chemistry' video with Dr. Douglas Hayward, FCIC. This last one seems to have been the most popular with the cable company and the general public.

Writing a Press Release

According to Jack Miller, science writer for The Toronto Star, a press release is like a singles' bar, you have 10 seconds to make a good first impression. Miller said, at a recent meeting, that he reads the first sentence of a press release and then decides whether or not to go further. If he is not interested by that point, the release goes in the recycling bin.

There are five factors that need to be present in your press release: 1) it should be about something new; 2) the subject matter should be of public interest; 3) the subject matter should be of interest to the media itself, 4) the subject matter should contain some element of conflict, emotion or other material to provide a 'hook' and; 5) for television only, there should be visual appeal.

Work with your local newspapers, radio and television stations to develop a good relationship. Whenever possible, go directly to a reporter in the news organization. Start with a telephone call and never show up unannounced. Offer to help in any way that you can, provide background information, but it is not a good idea to try and channel a reporter's efforts.

Most reporters consider all information given to them, either in writing or during an interview, to be 'on the record', which means for attribution. If this is not the case, for whatever reason, the reporter must be informed beforehand and must agree to the conditions. This is normally only of concern during an interview.

The view of the media on news conferences depends on the branch in which the reporter works. TV and radio reporters prefer them, while newspaper reporters hate them because these events do not allow them the freedom to prepare their own stories. If organizing a press conference, remember to consider the daily deadlines of your local media. Sometimes it is a good idea, particularly if you have a good working relationship with a reporter there, to give information on the press conference to your local newspaper the day before. This can be done with a telephone call and perhaps a faxed copy of the press release that will be distributed then. The information in that release could have an embargo on it (a date and time before which it should not be printed), and most newspapers will respect that embargo. By giving the information to the newspapers early, along with information on a contact person, you allow them to prepare and publish stories to their liking. With this kind of advance publication, you can increase the likelihood of the TV and radio media turning up at your news conference.

Most important, always remember to play to your strengths, and work within those relationships that you have developed with members of your local media.

That Press Release

One comment that came out of 1990's activities was a request for help in preparing such a press release. Most of those working in the media suggest that a press release contain the facts, without being overly aggressive. First, I will try to cover the basics of preparing a press release and a sample is included.

Press releases should be written in pyramid style: this means that all the necessary information should be given in the first paragraph and as early as possible. The first paragraph should contain the 'Five Ws': who, what, where, when, why and how (sometimes how much is also added, particularly when talking about the megaprojects sponsored by the federal government or a large corporation). Successive paragraphs should flesh out the points stated in the opening, but this information is intended only for those interested in continuing.

The press release itself should be short (no more than one sheet of paper), list contact people (complete with telephone numbers), and be as informative as possible. Be inventive, rather than run-of-the-mill, when trying to peak the curiosity of the media. These people may see hundreds of press releases in a week, so try and make yours stand out, if only in its attention to the facts and in trying not to write the reporter's story for him/her.

Sample Press Release

National Chemistry Week 2007

October 13 – 20, 2007

Chemistry is creative, chemistry is fun, and chemistry is happening in your community this fall. Come out and 'Discover Canadian Chemistry' during National Chemistry Week, held this year from October 13 - 20. This is a national outreach program, coordinated by The Chemical Institute of Canada (CIC). Members are organizing events in your community. Join us in discovering Canadian chemistry.

Science begins in the school and so CIC members are visiting the following schools (list the schools and the dates). The following organizations will be sponsoring open houses (list the companies/universities, dates and times).

If you have any questions, contact (fill in the name, address, e-mail and/or telephone number of a local contact).

Advertising

Paid advertising is a very effective and very expensive way to get your message across. If your Local Section can afford it, there are few methods of communication that have a greater impact.

However, most Local Sections and other interested groups just don't have the financial resources to buy air time or ad space. If this is the case with your Section, there are usually community activity columns in most newspapers, radio and television stations. You do stand the chance of getting lost-in-the-crowd, but it doesn't cost much more than a stamp. Use activity billboards wherever you can find them: schools, recreational facilities, university buildings, shopping malls, etc. Don't be afraid to try your local electronic bulletin board either.

If you are interested in finding out some more about advertising rates, which can vary significantly from region to region and media to media, go to the library and get the publication *Canadian Advertising Rates and Data*. It lists all media across Canada, complete with telephone number, publishing frequency and advertising rates.

Your Other Public

Once you have made contact with the general public through the media, you have your other public to address. Define the group(s) you want to receive information on National Chemistry Week and then look at what methods are available to get that information across.

In the case of local school students and their science teachers, contact by telephone, e-mail or mail, the local school boards and talk to the science consultant. It doesn't hurt to make contact with guidance counselors either. Next you can go to the school principals and the heads of the science department. Ask them what the

students would be interested in seeing: an in-class demonstration or maybe an outing to a business or educational institute. Do your best to please all of the people all of the time.

Your local business community can be an excellent source of information, contacts, potential speakers and tour locations. Contact any local business organization, such as the Chamber of Commerce, and ask if you can put something in the next newsletter. Or maybe they need a speaker for an upcoming luncheon? If so, see if someone in the Local Section would be of interest.

Use of the Web

The Web has become a major player in communication. When posting your information, make it look professional. Remember that this is being broadcast worldwide. Along with your local site (Local Section site, chemclub site, etc.), don't forget to post it on the NCW Web page of upcoming events (www.cheminst.ca/ncw). This list is posted on the NCW pages annually and archived for future reference.

And don't forget to send in your report of what took place. Remember when you send in your link to an existing page, particularly from ChemClubs that these pages are not saved from year to year. The CIC is archiving all of its NCW Activities pages.

CORPORATE SPONSORSHIP

Seeking corporate support for a cause is becoming increasingly competitive in these times of fiscal cutbacks. By targeting specific businesses and carefully modeling one's approach, the chance of receiving a positive response is greatly enhanced.

Outlined below are guidelines to provide assistance to those who are planning a corporate sponsorship strategy.

Key Messages: It is important to have clear objectives for the project you wish to sell. Ours is NCW. Therefore you want to have prepared some key messages to present to the people from whom you are soliciting support. Here are a few suggestions of key messages.

- It is important to develop a highly trained work force whose expertise will contribute to Canada's role in world-wide scientific advancement.
- There is a shortage of trained chemists to fill the pressing need for expert personnel in industry and research.
- There is a need to encourage our brightest students to choose a career in chemistry.
- Public understanding of chemistry's role in our daily lives is very low. We should all work together to dispel the notion of "chemophobia"

Prepare summary notes on NCW and your organization: The corporate sponsors will want to know if they are supporting a stable group and a worthwhile cause. Brief notes on the inception and history of National Chemistry Week follow and may be of use to you in preparing such notes.

Notes on NCW

In 1988, a national science literacy survey showed that public awareness and understanding of science and technology was low among Canadians.

The Canadian Society for Chemistry, therefore, decided to hold a National Chemistry Week to highlight the contributions of chemistry to modern society and its enormous potential for future generations.

The first NCW was held in 1989, but the level of Local Section participation was low. In 1990, at least 18 organizations reported having staged events with good results. They were successful enough to warrant the institution of NCW as an annual event.

In 1990, The Chemical Institute of Canada took over the administration of National Chemistry Week to include all chemical professions to become more involved and in 2003 the program rolled out its year round Public Understanding of Chemistry program.

Levels of participation a corporation may select: Corporate sponsorship may take the form of a cash donation or the provision of services or materials at no charge, ie. catering, use of hall or boardroom, technical support, printing, public relations advice, graphic or design services, supplying your materials, etc. Make sure you are prepared to ask for a specific amount of funds or services for a specific project or part of a project. In return, and depending on the value of the donation, you may present options as to how the corporation is to be recognized. These basic steps can certainly be expanded upon and tailored to your specific-projects.

- Corporate signage on-site during event
- Mention in a news release
- Invitations extended to corporate officials to attend event
- Recognition, at event, of corporate officials and mention of the donation
- Photo opportunities with corporate invitees

- Mention of corporate donor in publications or advertising

PLANNING AN OPEN HOUSE

Organizing an Open House is similar to organizing a public display although in a public display you take your accomplishments and knowledge out to the public and in an open house you invite the public to come to you to view your accomplishments and share your knowledge. Basic logistical arrangements apply to both activities. After going through this information you may want to review the information under the section **Public Displays and Demonstrations**.

Colleges, universities, industrial sites and research facilities are encouraged to open their doors to the public during NCW. Many departments are already holding Open Houses on an annual basis and have found this exercise to be beneficial and worthwhile.

Why an Open House? To develop a positive public appreciation of chemistry. Bright young students need to feel positive about chemistry and be encouraged to pursue careers in the chemical profession. The future health of the chemical profession and the economic well being of the chemical industry depend on this.

Keys to a Successful Open House: Planning, Participation and Publicity

Planning: Set up a planning group. You should not expect one person to do all the work. Identify your target audience and decide what you want to highlight. Test your program or exhibits with members of your targeted audience well in advance of the opening.

Ensure you draw up a budget, a staffing plan and a schedule with assigned responsibilities. People work best when they know exactly what is expected of them. Prepare a checklist of things that need to be done from well ahead of the Open House up to opening day.

Participation: Successful Open Houses need ample participation. Pull in enthusiastic volunteers to form your planning group. Involve one or two local teachers (elementary and high school), recruit people working in your operation, add a person from the local media or a local public relations firm and bring in some secondary school students to help plan.

Publicity: The best Open House in the world still needs publicity. Talk to your local media and invite them to tour before opening day when there are no crowds.

Advertise your Open House in the local newspaper a week ahead of time and then again during the week of the event. Since your event is free take advantage of free public service announcement services on radio and cable television.

Talk to teachers and/or send flyers to school for children to take home.

Where applicable, when you or your staff are participating in other public functions, talk about your upcoming Open House.

PROMOTIONAL SUPPLIES

Having fun items to hand out as a souvenir or as prizes is always encouraged. CIC National Office has a variety of smaller items such as tattoos, periodic table posters and rulers to larger items such as T-shirts, coffee mugs and water bottles. These articles can be ordered through the NCW page at www.cheminst.ca/ncw. There is a charge for most of these items but we have tried to keep costs as low as possible in order for you to distribute supplies to whole classrooms.

OTHER AVAILABLE RESOURCES

Are you looking for facts about Canadian chemists and chemical engineers for quizzes or to add to your talk? Check out www.cheminst.ca/ncw for articles, trivia written for high school students and links to other related sites. There is also information available on Canadian Landmarks, Canadian Milestones and the Canadian Science and Engineering Hall of Fame at www.cheminst.ca/publicunderstanding.

SAFETY HINTS

Minimum Safety Guidelines for Chemical Demonstrations - ACS Division of Chemical Education

Chemical Demonstrators Must:

1. Know the properties of the chemicals and the chemical reactions involved in all demonstrations presented.
2. Comply with all local rules and regulations.
3. Wear appropriate eye protection for all chemical demonstrations.
4. Warn the members of the audience to cover their ears whenever a loud noise is anticipated.
5. Plan the demonstration so that harmful quantities of noxious gases (e.g. nitrogen dioxide, sulfur dioxide, hydrogen sulfide) do not enter the local air supply.
6. Provide safety shield protection wherever the slightest possibility that a container, its fragments, or its contents could be propelled with sufficient force to cause personal injury.
7. Arrange to have a fire extinguisher at hand whenever the slightest possibility for fire exists.
8. Do not taste or encourage spectators to taste any non-food substance.
9. Do not use demonstrations in which parts of the human body are placed in danger (such as placing dry ice in the mouth or dipping hands into liquid nitrogen).
10. Do not use open containers of volatile, toxic substances (e.g. benzene, carbon tetrachloride, carbon disulfide, formaldehyde) without adequate ventilation as provided by fume hoods.
11. Provide written procedure, hazard, and disposal information for each demonstration whenever the audience is encouraged to repeat the demonstration.
12. Arrange for appropriate waste containers for and subsequent disposal of materials harmful to the environment.

For more details on Safety issues visit www.chemistry.org/ncw.

CHEMISTRY IS CREATIVE

"Chemistry is creative" was the theme of the 1990 National Chemistry Week. The results of creative chemistry and of creative chemists are all around you.

Consider your typical morning. It starts with the irritating "Bleep-Bleep" of your digital alarm. A chemist first made and studied the materials in the plastic case, the "chips" and quartz timing mechanism and the lithium battery that powers them-who said all of the results of Chemical creativity are pleasant? You throw back the brightly coloured polyester insulated comforter and blended cotton-polyester sheets. Chemical creativity is responsible for the polyester and the dyes to brighten your bed clothes.

As you stagger toward the bathroom, think about the carpet you are walking on, and the paint and the vinyl coated wallpaper and the dyes used to colour them. Step into the tub for your shower. You are still surrounded by the results of chemical creativity...the shower curtain, the wall tiles including their colouring materials and grouting, the painted ceiling, and even the enamel finish of the tub. Turn on the water using the chrome-plated brass taps. As you come awake in the water stream think about how the water was made safe to drink with chlorine, or, if you are on the Bay Bulls reservoir and the plant is working, ozone. Now, your shampoo and soap. Who first made the surfactants, the perfumes the anti-dandruff additives, and deodorants in them? Creative chemists.

Throughout the day, as you first towel yourself off get dressed, eat breakfast, brush your teeth, grab your coat and books and papers, and set-off for school...just about everything you see, smell, touch, taste, or hear is the result of or has been affected or influenced by chemical creativity. Let's consider the milk you poured on your cereal. It was in a brightly coloured, plastic coated paper container when you used it...plastics and dyes we have already mentioned and, of course, much creative chemistry has gone into paper making. The origin of the milk though was a cow, a cow that ate Vass, hay, and grain grown with the help of fertilizers herbicides and pesticides. The cow received essential vitamin and mineral supplements and, when sick, antibiotics and other medicines. Between the cow and the carton, the milk also encountered numerous results of chemical creativity some subtle, for example the tires of the trucks that hauled it at various stages of its travels, others more direct like the vitamin D supplements often added to milk

The vast majority of the results of creative chemistry that you encounter are beneficial. Sometimes though, the final application of *the chemist's* creativity is harmful but should chemistry and chemists be blamed for killing trout if a forester decides spraying is necessary to control the hemlock looper and the pilot of the plane sprays streams and ponds as well as forest? Even then, it is an analytical chemist using methods developed by chemists who identifies and quantifies the toxin and, often, chemists determine how to clean up the mess.

Chemists sometimes wonder why a chemical that returns you to health is not a "chemical" but 'medicine, why a twenty litre can of hexane spilled on a highway is a disastrous chemical spill when the local garage uses gasoline to clean grease off engine parts routinely, why people believe it is possible to have a 'pure, chemical free mineral water"... But why go on.

Without the creativity of chemists, our standard of living would be much lower, our lives much shorter, less healthy, less comfortable, less varied, much greyer and less colourful, and much smellier! And, of course, world hunger would be infinitely worse

National Chemistry Week and the theme "Chemistry is creative" were designed to make everyone more aware of the contributions of chemistry and chemists to society, to raise our profile and to make more young people aware of the value, excitement and challenges of chemistry. Canada and Canadians need more chemical creativity and creative chemists. Take advantage of National Chemistry Week and the opportunity it offers to learn and to think about chemistry's contributions to your daily life,

FIND THE CHEMICAL WORDS

Janice Kelland

Note: the words run in straight lines but may be horizontal, vertical, diagonal, forward, or backward. The same letter may be used several times.

M	E	T	A	L	E	T	A	T	I	P	I	C	E	R	P	H	N	S
C	O	M	P	O	U	N	D	C	I	N	O	I	Z	I	C	E	I	P
R	I	A	K	H	P	F	S	C	H	X	C	N	E	O	N	L	V	T
R	E	T	A	W	I	B	I	Y	I	F	L	A	S	K	V	I	O	E
N	U	C	L	E	U	S	D	D	C	S	E	G	F	E	Q	U	L	N
E	L	E	B	O	N	R	I	H	P	T	D	R	R	M	L	M	U	I
U	O	E	F	E	A	Z	E	C	A	P	R	O	T	O	N	U	M	L
T	C	I	R	T	E	M	I	V	A	R	G	X	C	L	E	I	E	A
R	N	O	E	T	I	F	I	E	L	L	Z	N	A	E	G	C	T	K
O	F	L	A	C	I	T	Y	L	A	N	A	M	T	F	Y	L	R	L
N	R	N	A	I	C	T	E	E	T	C	P	O	I	J	X	A	I	A
E	E	L	O	A	O	I	V	M	R	M	E	L	O	T	O	C	C	C
G	A	T	O	M	S	T	L	E	R	E	T	E	N	X	N	O	R	I
O	C	I	N	A	G	R	O	N	I	R	U	C	L	I	Q	U	I	D
R	T	C	N	I	Z	A	S	T	A	C	L	U	C	A	R	B	O	N
T	I	I	L	G	P	T	S	T	S	U	I	L	T	S	S	E	A	F
I	O	R	L	O	Z	I	I	E	P	R	D	E	G	T	A	S	Z	G
N	N	P	A	L	R	O	D	X	S	Y	S	I	S	Y	L	A	N	A
S	O	L	I	D	N	N	O	R	T	C	E	L	E	R	T	B	O	S

Words to find:

ACID	COMPOUND	HELIUM	NEUTRON	SALT
ACTIVATE		HYDRATE	NITROGEN	SILVER
AIR	DILUTE		NOBEL	SOLID
ALKALINE	DISSOLVE	IONIC	NUCLEUS	
ANALYSIS		INORGANIC		TITRATION
ANALYTICAL	ELECTRON	IRON	ORGANIC	
ANION	ELEMENT		OXIDIZE	VOLUMETRIC
ATOM		LIQUID	OXYGEN	
	FILTRATION			WATER
BASE	FLASK	MERCURY	PHYSICAL	
	FORENSIC	METAL	PRECIPITATE	ZINC
CALCIUM		MOLE	PROTON	
CARBON	GAS	MOLECULE		
CATION	GOLD		REACTION	
CHEMICAL	GRAVIMETRIC	NEON		

- 10** This green pigment of plants is used in breath mints and kitty litter.
- 11** The centre of an atom; it contains almost all of the mass
- 2** A container used by chemists; a Muppet lab assistant.
- 1**

FIND THE CHEMICAL WORDS

FL J. Anderson

Note the words run in straight **lines** but *in all* possible directions. The same letter may be **used in several** words.

T	I	M	E	R	F	L	A	S	K	L	E	S	C	H
E	B	R	A	S	S	I	S	Y	L	A	N	A	G	A
S	L	O	U	I	O	D	I	N	E	Y	R	L	E	R
T	H	E	R	M	O	M	E	T	E	R	E	T	S	D
T	E	O	M	O	T	A	N	H	R	I	K	C	O	N
U	L	P	T	E	N	E	X	E	H	T	A	C	R	U
B	I	E	N	T	N	E	C	S	P	S	E	O	C	O
E	U	N	O	S	E	T	C	I	S	A	B	L	U	P
C	M	I	X	T	U	R	E	S	D	I	L	O	S	M
A	E	R	Y	O	T	C	S	T	W	R	L	R	T	O
D	L	O	G	P	R	O	P	A	N	E	O	V	E	C
M	T	L	E	P	A	P	N	O	I	T	X	A	E	R
I	D	H	N	E	L	P	R	I	M	A	R	Y	L	R
U	A	C	I	D	L	E	T	S	A	W	O	L	S	G
M	I	C	A	C	A	R	B	O	N	O	G	R	A	M

Words to find:

ACID	CADMIUM	GOLD	MICA	SALT	TESTTUBE
AMINE	CARBON	GRAM	MIXTURE	SCENT	THERMOMETER
ANALYSIS	CHLORINE			SILVER	TIMER
ARGON	COLOR	HARD	NEUTRAL	SLOW	
ATOM	COMPOUND	HELIUM		SOLID	WASTE
	COPPER	HEXANE	OXYGEN	STEEL	WATER
BASIC		HOTTER		STIR	
BEAKER	ELEMENT		PRIMARY	STOPPED	
BORON		IODINE	PROPANE	SUCROSE	
BRASS	FLASK	MELT	REACTION	SYNTHESIS	