
MESSAGE TO PARENTS

The Host Committee is pleased and proud to have the privilege of hosting your young scientist at Canada-Wide Science Fair 2001. It is a great honour to win a trip to the most prestigious science fair in the country and your child deserves great recognition for this accomplishment. We hope the experience in Kingston will be one that will generate happy and cherished memories as well as friendships that will last a lifetime.

One of our major responsibilities is to provide a secure and safe environment for your sons and daughters while allowing them to enjoy their experience fully, whether it is the first time they have been involved in such an activity, or if they have had many such trips. Consequently, our activities and events are organized to ensure this environment.

Exhibitors and delegates will be housed at Victoria Hall residences of Queen's University.

Food services will be at the residences and special dietary needs will be accommodated. It is a short walk to the exhibit area where judging will take place. Exhibitors will be bussed to off-site activities.

Please make sure that special dietary needs are indicated on the registration form. Make sure that your delegate knows of any possible medical problems (allergies etc). Make sure that your young scientist understands that the delegate is acting for you, the parent, and any activities must be approved before they are undertaken.

All of the participants will attend an orientation session as part of the registration, at which time they will be acquainted with emergency procedures and safety tips.

If you have any questions, would like more information, or need to contact your child, please contact us at the numbers below.

Youth Science Foundation Canada / CWSF 2001

c/o Dept. of Chemistry
Queen's University
Kingston, ON, K7L-3N6
Tel: (613) 533-6755
Email: cwsf@post.queensu.ca

CWSF (24 hour) Emergency Number: Victoria Hall Residence (Queen's University) 1 (613) 533-2531

DIRECTIONS TO THE SITE BY ROAD : From Highway 401 take the Sir John A MacDonald exit at Kingston. Continue on Sir John A MacDonald 6 km until the traffic lights at Union Street intersection. Turn left onto Union Street and continue along until you see Albert Street and a playing field on the right. Turn right onto Albert Street and continue along until the first intersection. Turn left onto Queen's Street. The large stone building on your left is Victoria Hall residence, this is where everyone must register for CWSF 2001. Those exhibitors arriving by road are asked to arrive on Sunday May 13, 2001.

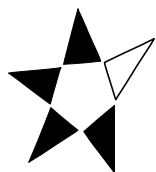
A GREAT CHECKLIST

Project materials and supplies

- All materials, backboard displays and equipment needed for my project are carefully packed and meet regulations (see pgs. 18-20)
- Materials needed to repack my project are included (tape, scissors, extra packing, etc.)
- Neon CWSF shipping labels are included
- Tools and supplies needed to set up my project are packed
- Backup copies of software and data discs are included
- Rough notes and data along with copies of project summary and FORMS A, B, C, D, H, I and J are packed

Personal items

- Money for personal expenses
- Health Card and Personal Identification
- Comfortable shoes for walking
- Formal Wear for Banquet and Awards Ceremony
- Casual clothes for other occasions
- Umbrella/Light Rain Gear
- A warm sweater / jacket
- Swim wear and gym clothes for activities
- A 'calling card' for long distance calls from the residence or change for the pay phones
- Personal toiletries
- Required medications
- Alarm clock
- Camera and film
- Buttons, badges and pins for trading



YOUTH SCIENCE
FOUNDATION CANADA
FONDATION SCIENCES
JEUNESSE CANADA



Youth Science Foundation Canada (YSF Canada) is a national organization, dedicated to stimulating an interest in science and technology among young Canadians.

For more information, contact:

Youth Science Foundation Canada / CWSF
2001
c/o Dept. of Chemistry
Queen's University
Kingston, ON, K7L-3N6
Phone: (613) 533 6755
Email: cwsf@post.queensu.ca

Charitable no. 88890 9645

The Canada-Wide Science Fair (CWSF) is the premier event and pinnacle of the National Science Fair Program of Youth Science Foundation Canada. It is organized and managed under contract to the Foundation by a Regional Science Fair Host Committee. Regional Science Fairs bid to hold the annual CWSF in their community. The Frontenac, Lennox and Addington Regional Science Fair successfully bid to host the CWSF in 2001.

EXHIBITOR REGISTRATION BOOKLET

Congratulations! You are going to the 2001 Canada-Wide Science Fair! To register, you must complete several forms. This booklet contains information that will assist you in completing these forms. Read the information carefully before you attempt to register. If you have any questions, contact your Regional Science Fair delegate.

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REGISTRATION FORMS

You should have the following forms in your package. If you do not, contact YSF Canada immediately at cwsf@post.queensu.ca or (613) 533 6755.

- FORM A - CWSF Participant Registration
- FORM B - CWSF Safety and Regulations Check-List
- FORM C - Project Highlight Sheet
- FORM D - Your Project in 50 Words
- FORM H - CWSF Exhibit Registration
- FORM I - Project Mentor Form
- FORM J - Consent Form

WELCOME FROM THE 2001 CWSF HOST COMMITTEE

To the 2001 Canada-Wide Science Fair participants:

Congratulations on earning a place at the Canada-Wide Science Fair! We are delighted to be hosting so many bright and hard working young scientists. The Canada-Wide Science Fair is always an important and enjoyable week for all involved. Kingston and the Host Committee 2001 are ready and waiting for your arrival.

You will be staying at the Queen's University campus in beautiful downtown Kingston. We have

planned many interesting and entertaining events and we know you will have a busy, educational, fun and memorable time. Please read through this registration package carefully so you are well prepared for the CWSF 2001 and all its exciting activities.

See you in May.

Heather Highet
Host Committee Chair, CWSF 2001

MESSAGE FROM YOUTH SCIENCE FOUNDATION CANADA

Dear Fellow Science Fair Enthusiasts:

As participants in the 2001 Canada-Wide Science Fair, we are deeply indebted.

We are indebted to the wonderful volunteers on the Host Committee. They began preparations for the CWSF almost 6 years ago, first deciding if such a huge project was feasible, then planning and presenting their bid. It would be impossible to add up all the time and energy they have expended so far and they will need to continue long after the fair to complete the project and prepare their reports. They deserve our thanks.

We are indebted to the staff who have bravely accepted new jobs this year to operationalise the Fair. Their professionalism and dedication to success demonstrate that they have moved beyond seeing this as a job. They have expended enormous energy, and have been very patient with us all.

We are indebted to our sponsors. Their generous support pays the bills, and makes available the awards we use to show how much Canada values the good work the exhibitors have done. The Host Committee has solicited sponsors from the Kingston area. The Youth Science Foundation Canada is supported by many fine corporations from many parts of Canada. The affiliated Regional Science Fairs in Canada also rely upon the generous

support of businesses, service clubs, universities and colleges, school boards and individuals.

We are indebted to the volunteers who serve as members of the National Science Fair Committee. They have worked throughout the year to improve the policies, rules and practices that make Science Fairs reliable and valuable events. You will see them at work in Kingston.

We are indebted to the volunteer members off the Board of Directors. They oversee the operations of the Youth Science Foundation Canada, and continue to work towards an organization that can serve the needs of the Science Fair community efficiently.

We are indebted to the teachers and mentors who got the exhibitors started on their projects, and helped guide them to the success of being at the national championship. We are indebted to the exhibitors for committing so much intelligence and persistence to their projects, and for bringing so much energy and power to Kingston.

None of us could do our part without all the others. Together, we are quite a team, and I look forward to when we all get together in Kingston in May.

Louis Silcox
Youth Science Foundation Canada - President

THE WEEK AT A GLANCE

Schedule of events for the week of the 2001 Canada-Wide Science Fair Theme: A Science Odyssey Through the Thousand Islands

Saturday May 12	<ul style="list-style-type: none"> • Early arrivals by air 	Wednesday May 16	<ul style="list-style-type: none"> • Special Awards Judging • Delegates' Workshops • Delegates Social • Fort Henry Barbecue
Sunday May 13	<ul style="list-style-type: none"> • Arrivals by surface and air • Registration at Victoria Hall • Project Set-Up, Safety Check • Exhibitor & Delegate Orientation • Science Olympic Activities 	Thursday May 17	<ul style="list-style-type: none"> • All day tours • Night on the Town- Take a Judge to Dinner
Monday May 14	<ul style="list-style-type: none"> • Opening Ceremony • City & University Tours • Research & Industrial Tours • Opening Banquet 	Friday May 18	<ul style="list-style-type: none"> • Mentorship Forum • Delegates' Meeting II • School Tours of Exhibits • Awards Ceremony • Awards Banquet • Much Music Video Dance
Tuesday May 15	<ul style="list-style-type: none"> • Divisional Judging • Delegates' & Zone Meetings • Thousand Islands Boat Cruise 	Saturday May 19	<ul style="list-style-type: none"> • Public Viewing of Exhibits • Project Take-down • Farewell BBQ- Lake Ontario Park • YSF Board of Directors Meeting • YSF Annual General Meeting
		Sunday May 20	<ul style="list-style-type: none"> • Departures

REMINDERS

Registration Deadline: April 17, 2001
Registration Fees: \$550/ person

The CWSF Official Website:
www.cwsf2001.org

Students should be in contact with their Regional Science Fair delegate in order to receive full information about online registration and travel details.

CONTACTS

Registration/ General Queries
Joyce Dillon or Colleen MacLean
Youth Science Foundation Canada-
Canada-Wide Science Fair 2001
c/o Dept. of Chemistry
Queen's University
Kingston, ON, K7L-3N6
Phone: (613) 533-6755
cwsf@post.queensu.ca

Central Travel Plan / Shipping of Projects
Liette Philippe
Carlson Wagonlit Travel
130 Albert St., Suite 714
Ottawa, ON, K1P 5G4
Phone: (613) 238-4040 ext. 222
Toll-free: 1-800-465-4040
Fax: (613) 238-4747
lphilippe@carlsonwagonlit.ca

A: REGISTRATION INSTRUCTIONS

Along with this registration booklet, you should have also received seven CWSF 2001 forms. These forms should be labelled A, B, C, D, H, I and J. Please ensure that your package has copies of all these forms. If you are missing one please contact your Regional Science Fair delegate or the CWSF 2001 office at cwsf@post.queensu.ca or (613) 533 6755.

This year, we are encouraging online registrations where possible. Any regions not able to use the online registration procedure may send paper copies of the forms to the YSF/CWSF 2001 office in Kingston. The deadline for registration is the same for online and mail-in registration. All forms and fee payment must be received by April 17, 2001

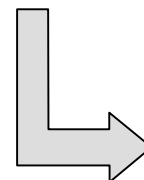
Online registration is overseen by the Regional Science Fair delegate. In most cases, exhibitors will complete each form by hand to produce a draft paper copy. These drafts will be checked by the Regional delegate for accuracy and completeness. Each exhibitor should keep a copy of their own forms for their records.

The Regional delegate will then input the information into the online system for CWSF 2001 registration. Regional delegates will be provided with access and identification codes in order to be able to enter the online registration screens on the CWSF 2001 web-site.

In some cases, students may be allowed to enter their own data online. In order to do this however, their Regional delegate must first review their drafted forms for accuracy and completeness, and then provide the student with their own access and identification codes. If any exhibitor inputs their own registration forms, they must first consult with their Regional delegate. Each delegate will receive detailed instructions about the online registration procedure.

Note about Signatures: If your region is mailing in its registrations, remember to complete and sign ALL the necessary forms. If your region is registering online, a sheet will be generated upon completion of the online registration procedure. This sheet requires signatures and must be returned to the CWSF 2001 office by mail. Forms I and J (if required) must also be returned by mail in all cases. Any regions missing the appropriate signatures will be contacted. This procedure will be overseen by your Regional delegate.

The following pages will help to explain the forms that were included with this booklet



FORM A - CWSF Participant Registration (each exhibitor must complete this form). Please ensure that all the information is filled out completely. There are a few areas which may need more explanation:

**A. SCI-TECH INNOVATORS –
THE YSF MENTORSHIP FORUM**

ATTENTION: SENIOR EXHIBITORS

Once again this year, YSF Canada is offering senior students an outstanding mentorship opportunity at the Canada-Wide Science Fair through the ‘Sci-Tech Innovators’ program.

All participating students, along with local and national YSF and CWSF benefactors, will be invited to the YSF Mentorship Forum breakfast on Friday morning, before the open house. Several sponsors will have display tables offering information on their mentorship programs and related activities.

All sponsors will receive a catalogue containing the names of the participating exhibitors, their regional affiliation and the 50-word summary of their projects. This will allow interested companies and organizations to pick the students they feel are best suited for exploring mentorship opportunities.

Those opportunities may include summer jobs, research support, access to specialized information or equipment, invitations to laboratories or conferences, etc. Sponsors may also want to put your project on display or feature your report in their publications.

Please note that this program is open to SENIOR students only, and that all arrangements for developing a mentoring relationship with a sponsor should be made between you, your parents, and your delegate.

If you would like to participate in the 2001 YSF Mentorship Forum, please check the box on Form A. Only those students who register by checking this box will be included.

B. TOURS AND ACTIVITIES

Tours and activities are listed in later section of this exhibitors booklet.. Some tours require Consent Form J to be completed, others do not, please note this when you are selecting your tours.

Thursday, May 17 all day tours: Select **four (4) tours** and list them by code number, in order of preference in the Section “**Tours**” on **FORM A – CWSF Participant Registration, Section B.**

E. PERMISSION

Please read the reverse of FORM A.

For online registration:

For legal purposes, at least one copy of your own or your parent/guardians signature (if you are under 21 years of age) must be mailed to the CWSF 2001 in paper copy. Your Regional delegate will organise this before the Fair. These signatures must be received by the Host Committee before final confirmation of the registration can be given.

For mail-in registration: It is imperative that you and/or your parents (if you are under 21 years of age) sign all the appropriate sections. Unsigned forms will be returned for completion.

FORM B - CWSF Safety and Regulations Checklist (complete one form per project)

It is essential that you read and understand the **Safety and Animal Experimentation Regulations outlined in this booklet** before you complete Form B. On the first day of the CWSF, your project will be examined by a CWSF Safety and Rules Committee member to ensure that it meets all regulations.

If your project does not pass the inspection, you will either be required to repair the display, or you may be disqualified. Work with your Regional Science Fair delegate to ensure that your project and the display do not conflict with these regulations. The Safety Checklist for CWSF 2001 is provided in this booklet.

FORM C - Project Highlight Sheet and 5-page summary (complete one form per project)

The Project Highlight Sheet must be used as the covering page for all CWSF project summaries. No title page or folder will be permitted. Your Project Summary can be submitted by mail or online. If you are registering online, the summary should be produced using a Microsoft Word, Word Perfect, PostScript, Text or PDF format. Please contact your regional delegate for more information concerning online registration and your 5-page summary.

The Project Highlight Sheet:

- a) is to be word processed or typewritten, single spaced
- b) is the covering page for your 5 page summary
- c) will be used to provide accurate information for various press releases
- d) will be sent to award sponsor(s). It is very important to demonstrate to them the quality of the winning projects. They may publish all or some of the details of the Project Highlight Sheet in their publications, newsletters, etc.

Please check the appropriate boxes on form C (Please refer to the Divisional Awards section pages 10-11 for more explanation of divisions):

a) Division

- B** = Biotechnology
CM = Computing and Mathematical Sciences
E = Engineering
EE = Earth & Environmental Sciences
LS = Life Sciences
PS = Physical Sciences

b) Category

- J** = **Junior** (Grades 7-8, Secondary I & II In Quebec)
I = **Intermediate** (Grades 9-10, Secondary III & IV in Quebec)
S = **Senior** (Grades 11, 12 & OAC, Secondary V, CEGEP I in Quebec)

c) Type

- E** = **Experiment**- a scientific experiment that tests a specific hypothesis
I = **Innovation**- the development and evaluation of new devices, models, techniques, or approaches in fields such as engineering, computers or technology
S = **Study**- the collection and analysis of data to reveal evidence of a scientific fact, situation or pattern.

Project Summary

Prepare a project summary that is concise, clear and of the highest quality. It is a key part of the judging process. It:

- a) is **no more than five** (8½" x 11") pages long - graphs, diagrams and charts may be included in the allotted space (no raw data or raw observations). Appendices are **not** acceptable; other than a bibliography, which is **required** for all projects.
- b) is **word processed or typewritten, double spaced** and is written on only one side of each sheet of paper;
- c) includes the following:
 - background, purpose and hypothesis (why the project was done);
 - procedure (very brief outline of the significant materials and methods used);
 - results and conclusions (no raw data or raw observations are to be included);
 - acknowledgements (recognition of those who provided significant assistance in the form of guidance, materials or facilities), and
 - a complete bibliography documenting all outside sources used for reference purposes (texts, scientific journals, Internet sites, interviews etc).

This summary will be used in judging. It is worth 10 of the 100 judging points and may be subsequently published by YSF Canada or award sponsors.

FORM D - Your Project in 50 Words (complete one form per project)

YSF Canada may publish a 50-word outline of some of the winning Canada-Wide Science Fair projects in a special publication. This form must be filled out accurately and concisely. It could be distributed to members of science industries and educational communities.

Your Project in 50 Words:

- must be no longer than 50-55 words. If it is longer, it will be cut.
- must be **word processed** or **typewritten** in the first person.
- is separate from the Project Highlight Sheet and the project summary.

FORM H - CWSF Exhibit Registration (one form per project)**A. Exhibit Information****Project title:**

For registration purposes, we ask that you limit your project title to 50 characters (including spaces). If your project title is longer, please shorten it on the form. The project title on your exhibit does not have to exactly match the one listed on your form.

Category, Division and Type:

To ensure your project is properly judged, read the information above and consult with your Regional Science Fair delegate.

B. Special Awards

To self-nominate for a Special Award, write the 4-letter code appearing by the Special Award description in this booklet. Codes ending in "J" are for juniors, "I" are for intermediates, "S" are for seniors, and those ending in "O" are open to everyone. Ensure that you do not nominate yourself for an award for which you are not eligible. If you do not wish to be considered for an award, please do not self-nominate. All participants will be considered for the Petro Canada Peer Awards, the Queen's University and the University of Western Ontario Scholarships, therefore students need not self-nominate for these awards.

Each participant can self-nominate for seven (7) Special Awards. Please verify your Special Award nominations with your Regional Science Fair delegate.

Students wishing to self-nominate for any award should do so with parental approval.

C. Declaration of Exhibitor

Please read the back of Form H for instruction on these sections.

D. Release of Information

Please read the back of FORM H for instructions on these sections.

Please make sure you are in contact with your regional delegate about the registration procedure, completion of forms and obtaining signatures.

FORM I – Project Mentor Form

Many students receive help with the development and completion of their project from mentors at recognized institutions. It is essential that the Canada Wide Science Fair committee, and judges, are aware of any assistance that was granted. Some examples of mentorship may include, but are not limited to, assistance with the: formulation of the topic or hypothesis; development of the project methods; analysis; provision of equipment, supplies or expertise; or assistance in drawing conclusions from the research. Any student who feels he/she has had this type of assistance must have Form I completed by a supervisor at the institution involved.

FORM J – Consent Form

Four (4) of the possible tours offered at the CWSF this year will include activities which will require an additional consent form. These tours include:

- ✓ Gould Lake – Canoeing
- ✓ Gould Lake – A visit back in time
- ✓ Gould Lake – Spelunking
- ✓ Kingston Mariners - Sailing

If you have indicated any of these tours as one of your four (4) choices on Form A, please have a parent or legal guardian complete this consent form.

Submission of forms: When all your forms (A, B, C, D, H, I and J when appropriate) have been completed contact your Regional Science Fair delegate. He/She will then organise the online or mail-in registration.

JUDGING PROCESS

Screening

Projects are classified by division, category and type. These classifications are decided before judging begins to assist in matching judges to exhibits. When registering for the CWSF, the exhibitor, with the help of their delegate, will decide on division placement. Before the CWSF, the Judge-in-Chief will examine each project summary and will determine if the project

has been properly placed. If the Judge-in-Chief feels an error might have been made regarding division placement, he/she will make a recommendation to the exhibitor and the delegate. However, the final decision regarding division placement rests with the student exhibitor and their regional delegate.

NATIONAL YOUTH SCIENCE AWARDS PROGRAM- CWSF AWARDS

1. Division Awards judging

A judging team will be assigned a specific group of projects in the same division and category (eg. Junior, Computing and Mathematical Sciences or Intermediate Life Sciences). Each exhibit will be evaluated five times, ie. five judges evaluate an individual project. Although judges assess each project individually, they communicate with other members of their team to rank the projects assigned to each team. Judging is a three-step process. First, judges will read project summaries in advance and view the exhibit without students being present. In the second part of judging, students are present at their exhibit. These interviews are the most important part of the process and approximately twenty (20) minutes is allocated for each one. Plan to describe your project no more than ten minutes and be prepared for the judges to ask questions for a further 10 minutes. In the third part of the process, after the students have left the exhibit area for the day, each judging team meets to rank the projects assigned to it. Then representatives of each team within a given division and category meet to select the medal winners and honourable mentions in that division-category. This third step involves discussion among the judges and often requires another viewing of the projects (without students being present – they have left for the day). On the basis of recommendations made by the judging teams, medals honourable mentions and any associated cash prizes will be allocated according to current YSF Canada policy, and at the discretion of the CWSF Awards Committee.

The divisions are:

- **Biotechnology** sponsored by Canada's Research-Based Pharmaceutical Companies (Rx&D)
- **Computing and Mathematical Sciences** sponsor to be announced
- **Earth and Environmental Sciences** sponsored by Petro-Canada.
- **Engineering** sponsor to be announced
- **Life Sciences** sponsored by Shell Canada Limited
- **Physical Sciences** sponsored by Dow Chemical Canada

Each division will be divided into three (3) categories:

Junior (Grades 7-8; Secondary I & II in Quebec)

Intermediate (Grades 9-10; Secondary III & IV in Quebec)

Senior (Grades 11-12 and OAC; Secondary V, CÉGEP I in Quebec)

In each division and category, the following guide is used:

2 exhibits	Gold	\$400.00 + Certificate
3 exhibits	Silver	\$300.00 + Certificate
4 exhibits	Bronze	\$200.00 + Certificate
10 exhibits	Honourable Mention	Certificate

2. Special Awards judging

Special Awards are based strictly on criteria established by the sponsor. Students must self-nominate for these awards when registering for the CWSF. Special Awards judges (often appointed by the sponsor) will spend approximately ten (10) minutes with your project. Plan to tell him/her what you did and why you deserve the award in about five (5) minutes to leave some time for questions. Be sure to prepare two different presentations for the judges – a longer one for the division awards judging and a shorter one for the special awards judging.

Certain Special Awards involve international travel and commitments which will require the recipient(s) to be absent from school/university for up to two (2) weeks. This commitment will be determined by self-nomination. Students wishing to self-nominate for these awards should do so with parental approval.

Several Special Awards are so heavily subscribed (usually over 100 self-nominations) that their judging is divided into two rounds. Round 1 takes place on the first day of judging and is based on rankings determined in the process of Divisional Judging. Round 2 takes place on the second day of judging during which the Special Awards judges interview exhibitors whose projects were not eliminated in Round 1. Exhibitors whose projects were eliminated in Round 1 will not be interviewed on the second day for the Special Award(s) in question. This two step process applies ONLY to a few heavily subscribed special awards.

3. Grand Awards judging

Grand Award recipients are selected by a special panel of YSF Canada judges headed by the National Judge-in-Chief. Eligibility will be determined by a number of factors including: rigorous scientific merit, medal standing as determined by the CWSF Judge-in-Chief/Judging Subcommittee, age and project criteria, as specified. Grand Award judging will take place at the same time as the Special Award judging.

SAMPLE JUDGING FORM

PART A: SCIENTIFIC THOUGHT - 45 %			Mark
Experiment	Innovation	Study	
An investigation undertaken to test a scientific hypothesis using experiments. Experimental variables, if identified, are controlled to some extent.	The development and evaluation of innovative devices, models or techniques or approaches in technology, engineering or computers (hardware or software).	A collection and analysis of data to reveal evidence of a fact or a situation of scientific interest. It could include a study of cause and affect relationships or theoretical investigations of scientific data.	
Level 1 (low) Mark Range 5 to 15			
Duplication of a known experiment to confirm the hypothesis. The hypothesis is totally predictable.	Building models (devices) to duplicate existing technology.	Study of existing printed material related to the basic issue.	
Level 2 (fair) Mark Range 15 to 25			
Extend a known experiment through modification of procedures, data gathering, and application.	Make improvements to, or demonstrate new applications for existing technological systems or equipment and justify them.	Study of material collected through compilation of existing data and through personal observations. Display attempts to address a specific issue.	
Level 3 (good) Mark Range 25 to 35			
Devise and carry out an original experiment with controls. Variables identified. Some significant variables are controlled. Analysis such as graphs/simple statistics.	Design and build innovative technology or provide adaptations to existing technology that will have human benefit and/or economic applications.	Study based on observations and literary research illustrating various options for dealing with a relevant issue. Appropriate analysis (arithmetic, statistical, or graphical) of some significant variable(s).	
Level 4 (excellent) Mark Range 35 to 45			
Devise and carry out original experimental research which attempts to control or investigate most significant variables. Data analysis includes statistical analysis.	Integrate several technologies, inventions or designs and construct an innovative technological system that will have human and/or commercial benefit.	Study correlating information from a variety of significant sources which may illustrate cause and effect or original solutions to current problems through synthesis. Significant variable(s) are identified with in-depth statistical analysis of data.	
PART B: ORIGINAL CREATIVITY - 25%			
Rank 1 (low) Mark Range 5 to 10	Rank 2 (fair) Mark Range 10 to 15	Rank 3 (good) Mark Range 15 to 20	Rank 4 (excellent) Mark Range 20 to 25
Little imagination shown. Project design is simple with minimal student input. A textbook or magazine type project.	Some creativity shown in a project of fair to good design. Standard approach using common resources or equipment. Topic is a current or common one.	Imaginative project, Good use of available resources. Well thought out, above ordinary approach. Creativity in design and/or use of materials.	A highly original project or a novel approach. Shows resourcefulness, creativity in design. Use of equipment and/or construction of project.
Mark			

Paste Label here

PART C: DISPLAY
Maximum 20 Marks

1. Skill (Maximum 10 Marks)	Max	Mark
Necessary scientific skill shown.	3	
Exhibit was well constructed.	3	
Material prepared independently.	2	
Judge's discretion.	2	
2. Dramatic Value (Max 10 Marks)		
Layout logical and self-explanatory.	3	
Exhibit attractive.	3	
Clear logical enthusiastic presentation.	3	
Judge's discretion.	1	
Total Display Mark	20	

PART D: PROJECT SUMMARY
Maximum 10 Marks

1. Information	Max	Mark
Is all the required information provided?	3	
Is the information in the specified format?	1	
Is information presented clearly with continuity?	2	
Summary accurately reflects the project.	2	
2. Presentation		
Neatness, grammar, spelling in the report.	2	
Total Project Summary Mark	10	

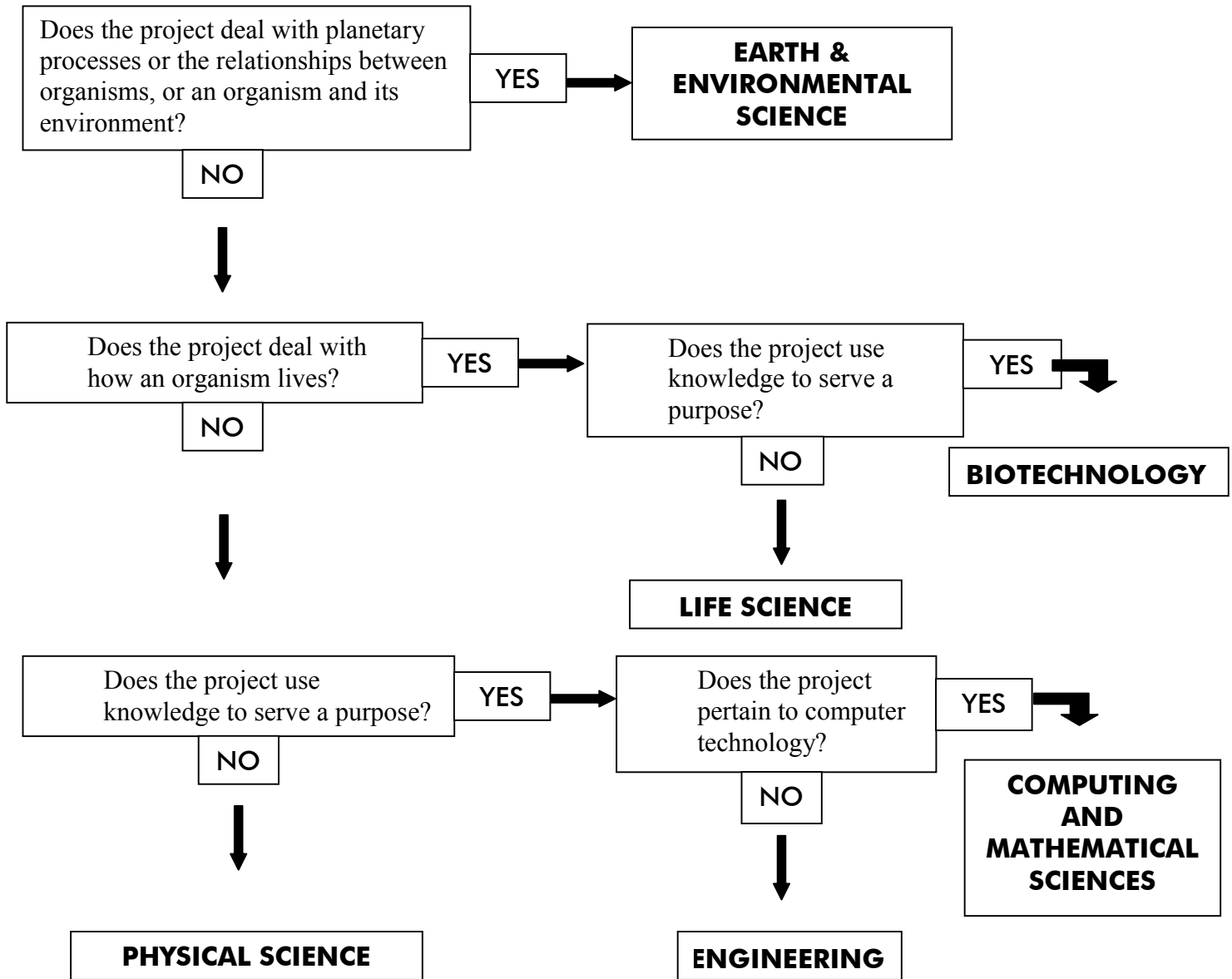
Total Marks		
Part A: Scientific Thought (from page 1).	45	
Part B: Original Creativity (from page 1).	25	
Part C: Display.	20	
Part D: Project Summary.	10	
Total Mark awarded to this exhibit.	100	

FEEDBACK FOR THE EXHIBITOR(S)	
Strengths	_____
Recommendations	_____
Judge's Name (Please Print!)	Judge's Signature

AWARDS

Divisional Awards

Flowchart to assist in selecting project division



DESCRIPTION OF DIVISIONS

A **Biotechnology** project is the application of knowledge of biological systems to solve a problem, create a product or provide a service. Biotechnology projects will fall into one of three subject fields; crop development, animal science, and microbials.

Within Biotechnology, crop development underscores that the interest is not in just plants, but in plants which are involved in an agricultural, horticultural or silvicultural (forestry) production. Projects in this area may investigate problems of herbicide tolerance, spacing, cultivation, irrigation, effect of soil variation, hybridization, etc.

Animal science projects would pertain to animals involved in agriculture and aquaculture, those domesticated as pets, or for sport, as well as projects where humans are participating in wild animals' lives, perhaps through habitat revitalisation, population management, or harvesting. All projects involving animals demand careful planning with respect to YSF Canada regulations.

Study-type projects should be considered by pupils with an interest in animal science. Possible topics include enhancement of animal production, reproductive technologies, genetics and transgenics, animal health, housing, training and interactions.

Microbial projects consider how the microbials are affecting productivity in agriculture, horticulture and forestry. Possible topics include plant growth-promoting rhizobacteria, biological weed and fungal control, bio-fuel cells, etc.

Projects which focus on the acquisition of knowledge about how something lives should be categorized as Life Science, not Biotechnology. The distinction is similar to that between Physical Science projects and Engineering projects. In both cases projects in the latter division deal with an application of knowledge to solve a problem. Often the discriminating factor is in the student's conceptualisation of the project. There will be situations where the choice is not clear.

A **Computing & Mathematical Sciences** project may be an engineering-type project focussed on hardware or software development. This division also includes projects that deal with mathematical models or which have used math to solve theoretical problems.

Projects which use computers just to store and manipulate data should be exhibited in the division suggested by the nature of the data. If the focus is an innovative way to use the computer or mathematical model, then the data is secondary and the project should be entered in Computing & Mathematical Sciences.

An **Earth & Environmental Sciences** project has as its focus either a topic relating to planetary processes or the relationships of organisms to those processes, or between or among organisms.

Projects in this division can include the pursuit of knowledge in any of the following scientific disciplines: Geology, Mineralogy, Physiography, Oceanography, Limnology, Climatology, Seismology, Geography, and Ecology. Earth and Environmental science involves the study of pollution (air, water, and land) its sources and its control. It also can involve studies of biotic and/or abiotic factors in an environment where such studies enhance our

understanding of biological relationships and abiotic cycles.

Studies dealing with resource management or sustainable development would fall into this category. Examples of such studies might include capture/recapture studies for estimation of population densities, determination of bio-productivity in a specific ecosystem or niche, studies of plate tectonics and examination of mineral cycles (e.g. Salt mills in the oceans).

An **Engineering** project applies physical science knowledge to solve a problem or achieve a purpose.

Engineering projects investigate the utility of innovations and inventions. Although a complete engineering project will include an outline of the need, the development of the innovation and some work on introducing the innovation to the community, many

projects focus on just the development phase.

Engineering projects can focus on a new process, or a new product. A study of Bernoulli's principle would be Physical Science, while the application of such a principle to aerodynamics and wing design would be Engineering.

A **Life Sciences** project examines some aspect of the life or life style of an organism.

Life Science projects include botany and zoology, as well as psychology and kinesiology. Examining plant growth, animal behaviour, human perception or the mechanics of human movement are examples of Life Science. Some phenomenon, such as digestion, are both Life Science and Physical Science.

To determine the best placement, consider whether the exhibitor's intent was to study the chemistry of the process, or the role of the process in the life of the animal (eating, production of enzymes, handling of waste, etc.) Does the exhibitor's view of the problem extend to include the organism?

A **Physical Sciences** project studies an abiotic phenomenon in order to understand the relation of identified factors, perhaps including a cause and effect relationship.

Physical Science projects study the relationship of factors in fields such as physics, chemistry, and astronomy. Comparison testing of projects, as it is descriptive, would be included.

Some projects entered as physical science may be more accurately entered as engineering. For example, experimenting to find "Which Materials Absorb Oil Best?" is only physical science, although there is an implied application in the work, such as that it is almost "Which Materials Can Absorb Oil From an Oil Spill?" Determining the exhibitors intent should help clarify.

The Chief Judge may recommend a change of division to allow for the fairest adjudication of the students' work but the final decision regarding the division placement rests with the student exhibitor and their regional delegate.

Special Awards

Instructions for self-nomination

To self-nominate for a Special Award write the 4-letter code appearing by the Special Award description of FORM H - CWSF Exhibit Registration.

Codes ending in:

- "J" are for juniors
- "I" are for intermediates
- "S" are for seniors
- "O" are open to everyone

Each participant can self-nominate for a maximum of 7 awards.

Please ensure that you do not nominate yourself for an award for which you are not eligible. Discuss your selection with your Regional Science Fair delegate or Chief Judge.

A single project means that it is a one-person project, a team project means that it is a two-person project. Do not nominate yourself for a single-project award when you are a team.

IMPORTANT

Be sure to talk over the timing and location of the trips with your parents. If you do not want to be considered for a trip, or another award, please **do not nominate yourself**.

Special Awards include scholarships, cash awards, trips and other prizes for projects which meet specific criteria established by the sponsor(s).

Title	Agriculture and Agri-Food Canada Award		
Sponsor	Agriculture and Agri-Food Canada		
Criteria	Outstanding projects relevant to the area of agriculture and/or agri-food.		
Awards (6)	Junior: \$500 (2 awards)	Intermediate: \$1000 (2 awards)	Senior: \$1000 (2 awards)
Award Codes	AGR-J	AGR-I	AGR-S
Remarks	The relevance can be to production agriculture, the input or processing industries, or the consumer. Projects will be judged on the basis of innovation, creativity and originality, and potential benefits.		

Title	Air Canada Youth Science Award		
Sponsor	Air Canada		
Criteria	Outstanding single senior engineering project		
Award	Senior: Two return hospitality tickets to any scheduled North American destination served by Air Canada (including Mexico, Hawaii, and the Caribbean).		
Award Code	AIR-S		
Remarks	Certain blackouts apply. All travel must be completed by Dec 15 2001.		

Title	AECL Award for Excellence in Science		
Sponsor	Atomic Energy of Canada Ltd.		
Criteria	Outstanding project related to energy and the environment.		
Awards (3)	Junior: \$1500	Intermediate: \$1500	Senior: \$1500
Award Codes	AEC-J	AEC-I	AEC-S

Title	Bell Canada Communications Award		
Sponsor	Bell Canada		
Criteria	Most innovative use of communications resources.		
Award	Open (Junior, Intermediate, or Senior): \$1500		
Award Code	BEL-O		

Title	CWSF 2001 Special Award		
Sponsor	Canadian Acoustical Society		
Criteria	Outstanding project related to acoustics (The Science of Sound)		
Award	Open (Junior, Intermediate, or Senior): \$400 plus subscription to the Canadian Acoustics Association's quarterly journal		
Award Code	CAA-O		

Title	CAP Physics Prize		
Sponsor	Canadian Association of Physicists		
Criteria	Outstanding projects related to physics.		
Awards (3)	Junior: \$250	Intermediate: \$250	Senior: \$250
Award Codes	CAP-J	CAP-I	CAP-S

Title	CWSF 2001 Special Award		
Sponsor	Canadian Council of Professional Engineers		
Criteria	Outstanding projects related to engineering		
Awards (3)	Junior: \$500	Intermediate: \$500	Senior: \$500
Award Codes	CPE-J	CPE-I	CPE-S

Title	George Fletcher Award		
Sponsor	Canadian Council of Technicians and Technologists		
Criteria	Outstanding intermediate project related to engineering		
Award	Intermediate: \$500 and a plaque		
Award Code	CCT-I		

Title	The CFES Learning Development Award		
Sponsor	Canadian Federation of Engineering Students		
Criteria	The best engineering-related project that demonstrates long-term interest and involvement.		
Award	Open (Junior, Intermediate, or Senior): \$300		
Award Code	FES-O		
Remarks	The CFES Award is given to the best student project that builds upon previously presented work, whether at a CWSF or elsewhere.		

Title	CWSF 2001 Special Award		
Sponsor	Canadian Institute for Photonic Innovation and the Optical Society of America		
Criteria	Outstanding project related to the fields of light, vision, optics, and photonics		
Award	Open (Junior, Intermediate, or Senior): \$500		
Award Code	CIP-O		

Title	CWSF 2001 Special Award		
Sponsor	Canadian Mathematical Society		
Criteria	Outstanding projects related to the mathematical sciences or that make extensive use of mathematics		
Awards (3)	Junior: \$200	Intermediate: \$300	Senior: \$500
Award Codes	CMS-J	CMS-I	CMS-S

Title	CWSF 2001 Special Award		
Sponsor	Canadian Psychological Association		
Criteria	Outstanding projects related to psychology		
Awards (3)	Junior: \$150	Intermediate: \$200	Senior: \$300
Award Codes	PSY-J	PSY-I	PSY-S

Title	CWSF 2001 Special Award		
Sponsor	Canadian Society for Medical Laboratory Science		
Criteria	Excellence in planning and design of a biomedical experiment, innovation or study by a single participant or group, of relevance to the area of medical laboratory science		
Award	Intermediate: \$500		
Award Code	CSL-I		

Title	The Joseph W. and Joel Anthony Leon Kerbel Scholarship & The Arthur and Beatrice Minden Scholarship		
Sponsor	Canadian Society for the Weizmann Institute of Science		
Criteria	Four outstanding single senior projects. The student must be in her or his final year of high school (CÉGEP 1 in Quebec).		
Awards (4)	Senior: Each scholarship allows participation in the summer science program at the Weizmann Institute in Israel, including registration fee and the return airfare (Toronto-Israel-Toronto)		
Award Code	WZM-S		
Remarks	The dates of the Weizmann summer science program are July 2-July 27, 2001.		

Title	CWSF 2001 Special Award		
Sponsor	Carlson Wagonlit Travel/Madison Travel		
Criteria	Outstanding projects showing the greatest potential as researchers		
Awards (2)	Open (Junior, Intermediate, or Senior): \$250 (2 awards)		
Award Code	CWM-O		

Title	CWSF 2001 Special Award		
Sponsor	Chemical Institute of Canada		
Criteria	Outstanding intermediate and senior projects related to chemistry		
Awards (2)	Intermediate: \$250	Senior: \$500	
Award Codes	CHM-I	CHM-S	

Title	CWSF 2001 Special Award		
Sponsor	Corel Corporation		
Criteria	Outstanding visual and graphic presentation in a single project		
Awards (3)	Junior: One package of CorelDraw software (value \$495)	Intermediate: One package of CorelDraw software (value \$495)	Senior: One package of CorelDraw software (value \$495)
Award Codes	COR-J	COR-I	COR-S

Title	@discovery.ca/Nathan Divinsky Math Award
Sponsor	Discovery Channel
Criteria	Outstanding project that uses mathematical principles to explain or solve a problem in everyday life
Award	Open (Junior, Intermediate, or Senior): \$750 scholarship
Award Code	DIS-O

Title	Science Communication Award	
Sponsor	Dow Chemical Canada Inc	
Criteria	Best communicated junior or intermediate projects	
Awards (10)	Junior: \$500	Intermediate: \$500
Award Codes	DOW-J	DOW-I
Remarks	Each award also includes a prize of \$500 to the sponsoring region in support of travel to future Canada-Wide Science Fairs.	

Title	Healthy Environment Award
Sponsor	Environment Canada
Criteria	Outstanding project relating to clean air and the environment
Award	Open (Junior, Intermediate, or Senior): \$1000 scholarship
Award Code	ENV-O

Title	CWSF 2001 Special Award		
Sponsor	Geological Association of Canada		
Criteria	Outstanding project related to earth science (including geology, geophysics, remote sensing, energy and mineral resources, water pollution, and ocean studies)		
Awards (3)	Junior: \$250	Intermediate: \$500	Senior: \$750
Award Codes	GAC-J	GAC-I	GAC-S

Title	Intel Computer Science Award		
Sponsor	Intel of Canada, Ltd		
Criteria	Most innovative use of a personal computer in any discipline		
Awards (3)	Junior: \$1000	Intermediate: \$1500	Senior: \$2500
Award Codes	INT-J	INT-I	INT-S
Remarks	The PC application must be an integral non-trivial part of the scientific project (i.e. not merely used as a word processor or spreadsheet). Without the use of a PC, the project would not have been possible in its present form.		

Title	CWSF 2001 Special Award		
Sponsor	Life Members' Organization of the EIC		
Criteria	Outstanding innovative junior engineering projects		
Awards (2)	Junior: \$300 (first place), \$200 (second place)		
Award Code	EIC-J		

Title	The Manning Innovation Achievement Awards		
Sponsor	The Manning Innovation Awards		
Criteria	Outstanding senior innovation projects.		
Awards (8)	Senior: \$500		
Award Code	MAN-S		
Remarks	Four of the Manning Innovation Achievement Award winners will also be announced as winners of \$4000 Manning Young Canadian Awards (to be presented at a later date)		

Title	Merck Frosst Award		
Sponsor	Merck Frosst Canada Inc.		
Criteria	Outstanding project in the field of pharmaceutical sciences, medicine, biology, or chemistry, related to human health		
Awards (3)	Junior: \$500	Intermediate: \$500	Senior: \$500
Award Codes	MER-J	MER-I	MER-S
Remarks	Each award includes a prize of \$500 in the student's name to his or her high school or science club to be applied towards the purchase of science equipment for the school of science club where the project was conducted.		

Title	MetSoc (CIM) Materials/Metallurgy Award		
Sponsor	The Metallurgical Society of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM)		
Criteria	Best application of a new material or process related to the materials and metallurgy industry		
Award	Open (Junior, Intermediate, or Senior): \$500		
Award Code	CIM-O		

Title	NRCan Office of Energy Efficiency Award		
Sponsor	Natural Resources Canada Office of Energy Efficiency		
Criteria	Outstanding projects related to the efficiency of energy use		
Awards (3)	Junior: \$500	Intermediate: \$500	Senior: \$500
Award Codes	NAT-J	NAT-I	NAT-S

Title	Ontario Power Generation Renewable Energy Award		
Sponsor	Ontario Power Generation		
Criteria	Outstanding projects related to renewable energy and air quality with a demonstrated interest in environmental stewardship		
Awards (6)	Junior: \$500 (2)	Intermediate: \$1000 (2)	Senior: \$1500 (2)
Award Codes	OPG-J	OPG-I	OPG-S

Title	CWSF 2001 Special Award		
Sponsor	Pulp & Paper Technical Association of Canada		
Criteria	Outstanding project related to the pulp and paper industry		
Award	Open (Junior, Intermediate, or Senior): \$500		
Award Code	PPA-O		

Title	Queen's University Applied Science Award		
Sponsor	Faculty of Applied Science at Queen's University		
Criteria	An outstanding project demonstrating an innovative integration of scientific theory and engineering practice		
Award	Open (Junior, Intermediate, or Senior): \$1000 cash immediately. Also, a \$1500 tuition scholarship to Queen's Applied Science (conditional upon acceptance to the program).		
Award Code	QUE-O		

Note: the following awards do not require self-nomination.

Title	The University of Western Ontario Scholarship
Sponsor	The University of Western Ontario
Criteria	In each of the six Divisions, the scholarship is offered to each of the winners of the Gold, Silver, and Bronze medals who enter the University for further study
Awards (18)	Open (Junior, Intermediate, or Senior): one (1) entrance scholarship of \$2000 to the University of Western Ontario
Award Code	No self-nomination necessary
Remarks	Students must maintain an "A" average in their final marks in the last year of high school and must also register for full-time studies at Western.

Title	The Queen's University Scholarships
Sponsor	Queen's University
Criteria	The scholarships are offered to 5 students, selected from the divisional Gold Medal winners, who enter Queen's University for further studies.
Award	Five (5) entrance scholarships of \$10,000 each to Queen's University, \$2,500 per year for four years.
Award Code	No self-nomination necessary
Remarks	Students must maintain an "A" average in their final marks in the last year of high school, must meet Queen's admission requirements and must also register for full-time studies at Queen's.

Petro-Canada Peer Prize for Innovation

The Petro-Canada Peer Innovation Awards provide an opportunity for Canada-Wide Science Fair participants themselves to recognize projects that exemplify innovation and excellence in science and technology. The student (or 2 students together) for each project casts one vote for up to three projects (which may include their own) from their geographic zone and grade category. The award includes a cash prize and a scholarship. A total of 18 awards-three categories in each of six zones- are presented.

Title	Petro-Canada Peer Prize for Innovation
Sponsor	Petro-Canada
Criteria	The Petro-Canada Peer Innovation Awards are an opportunity for Canada-Wide Science Fair exhibitors to honour projects that exemplify innovation and excellence in science and technology
Awards (18)	Open (Junior, Intermediate, or Senior): Eighteen (18) regional prizes of \$750, each consisting of a \$500 scholarship and \$250 cash, award as follows: Atlantic Canada (3), Quebec (3), Southern Ontario (3), Northern and Eastern Ontario (3), Central Canada (3), Western Canada (3)
Award Code	All students will be considered for this prize. No self-nomination necessary

Grand Awards:

Note: no self-nomination is required for the Grand Awards, those which recognise 'the best of the best.'

The **Best Junior**, **Best Intermediate**, and **Best Senior projects in the Fair** are chosen from among the gold medallists. They receive a \$2500 scholarship from prize sponsor **Rockwell Automation Canada Inc.** One of the projects is then named **Best Overall in the Fair**; that project is awarded a \$7500 cash award from prize sponsor **Alberta Energy Company Ltd.**

TEAM CANADA-YSF : A CANADIAN SUCCESS STORY

Team Canada-YSF represents us at the Intel International Science and Engineering Fair (ISEF) held in the United States. The students on Team Canada-YSF have attended the Canada-Wide Science Fair at least once, and are willing to compete again at this elite level.

The application process for the ISEF is more complex than for the Canada-Wide Science Fair (CWSF), and students need guidance to ensure that they meet the rules of the ISEF. In particular, students are evaluated on the work they have done in any continuous 12 month period starting on January 1, and ending in May of the following year. For example, a student can start a project on January 1, 2001, present at the CWSF in 2001, continue the project until December 31, 2001, and present it at the ISEF in 2002. This is a major change in the ISEF rules that will make it much easier for Canadian students to present at the ISEF. Applicants submit a videotape and a written report to the Scientific Advisory Committee which selects the winners. The members include Faculty members from The University of Western Ontario, the University of Guelph, teachers, the National Judge-in-chief, The Fair Director of team Canada-YSF and a YSF

Board representative. The committee views the video tapes, and reviews the documentation, iterating this process over a number of rounds until the final members of Team Canada YSF are selected. The committee starts at 9:00 am, and usually finishes at 5:00 pm. All applicants are phoned as soon as the results are available.

More details about this outstanding program are available at the web site for Team Canada-YSF, <http://www.physics.uwo.ca/teamcana/teamcana.htm>. If you wish to enter the Team Canada YSF competition, please visit the web site and follow the instructions. The deadline for submission of the initial set of application forms is in mid-December, so if you are interested, visit the web site early.

The members of Team Canada-YSF have consistently performed exceptionally at ISEF, and in 1998 every member of the team received at least one award, a first for us.

SAFETY & ANIMAL/HUMAN SUBJECT EXPERIMENTATION REGULATIONS

Some exceptions to these regulations may be allowed if it can be demonstrated that to do so does not pose a risk, and does not give the exhibitor an unfair advantage. Any such petitions are to be made to:

Louis Silcox, Principal
 Conestogo Public School
 1948 Sawmill Road, Conestogo, ON N0B 1N0
 School: (519) 664-3773 Fax: (519) 664-1667
 Home: (519) 662-9303 email:
silcox@golden.net
 (or) Louis_Silcox@wrdsb.edu.on.ca

SAFETY REGULATIONS AT THE CANADA-WIDE SCIENCE FAIR

General safety

1. Safety to the public is a prime consideration. Suitable precautions must be taken to prevent the possibility of personal injury, property damage, and the legal action that could result from a lack of concern for safety.
2. Remove or otherwise protect all sharp edges or corners on prisms, mirrors, enclosures, and glass and metal plates.
3. Compressed gas cylinders are not allowed.
4. The length of hoses or extension cords is to be kept to a minimum and out of the way to eliminate tripping hazards. Use tape for securing.
5. Aisles and exits should not be obstructed.
6. Moving exhibits should be restricted to the regulation display space. (e.g. radio-controlled vehicles, robots). The Host Committee must try to provide an exhibition area to safely demonstrate projects that require more space than the regulated exhibit display space.
7. The regulations contained within are complete. There are no local municipal or provincial regulations which must also be followed.

Fire safety

Certain restrictions have been defined on the construction of displays to reduce the possibility of accidental fire during the fair, and in the event of fire to allow for safe evacuation of the building.

1. Displays are to be constructed of materials that are unlikely to ignite and, in the presence of fire, will not allow the flame to spread readily. Recommended backboards include wood and wood products 1/4 inch thick or thicker and synthetic materials designed for display purposes. Backboards constructed of corrugated cardboard, bristol board and other paper products are not acceptable.
2. Panels can be decorated by paper that is applied with wallpaper paste, rubber cement or glue so that minimal air pockets are left behind it. This includes lettering, experimental write-up sheets, borders, and backgrounds.

Overlapping sheets of notes or graphs are to be stored in a data book, not stacked on the backboard. Panels can be painted with any common paint. No proof of source is required. All other coating materials must be Underwriter Lab approved and proof of such approval is needed, i.e. the can and its label.

3. The Host Committee will be responsible for ensuring that fire extinguishers of proper size and rating are available in the exhibition area. The Host Committee will establish an exhibit hall layout that minimizes long rows in order to reduce flame spread.
4. Combustible material must not be used near a heat source.
5. Open flames must not be used.
6. Smoking is not permitted in the exhibit area.
7. Packing material must not be stored in the exhibit hall.

Chemical safety

1. No containers of toxic or flammable chemicals are allowed.
2. Dangerous chemicals are not allowed - this includes prescription drugs and over-the-counter medication.
3. Use substitutes for toxic and corrosive chemicals. Common salt, for example, can be used to simulate chemicals such as ammonium nitrate. Use water instead of alcohol, ether, and other highly flammable liquids. Molasses can be used to represent petroleum products. When chemicals are simulated, they should be labeled with the names of the substance they represent preceded by the word "simulated". No project will be penalized because the key (but potentially dangerous) components were not on display.

If you have concerns or questions about CWSF rules and regulations, you can find the Youth Science Foundation Canada Policy, Procedures and Guidelines Manual at:

www.cwsf2001.org

Electrical safety

5. Use voltage as low as possible.
2. Use a ground fault interrupter for electrical leaks and faults. The Host Committee will ensure that such units are installed on the main electrical control panel serving the entire exhibit area.
3. Disconnect all electrical exhibits at the end of the day or the viewing period, or switch off power bars.
4. Use only extension cords in good repair with CSA approval.
5. Where practical, it is recommended that pilot lights be used to indicate that the voltage is on.
6. Cord-connected electrical appliances should have a 3-wire conductor with ground or be CSA approved.
7. An insulating grommet is required at the point where the service enters any enclosure.
8. Electrical devices must be protectively enclosed as far as it is practical.
9. Any enclosure must be non-combustible. All non-current-carrying metal parts must be grounded.
10. No exposed live parts over 36 volts are allowed. Current (amperage) must be low so as not to cause any discomfort or danger if touched.
11. Wet cells shall not be used because of the hazardous chemicals involved.

Structural and mechanical safety

5. Exhibits must be of a safe design with adequate stability to keep from tipping.
2. Dangerous moving parts such as belts, gears, pulleys and propeller blades must be suitably guarded.
3. Pressurized vessels should have a safety valve.

Use of x-rays or radiation-producing equipment

If an exhibit uses x-ray equipment or any other equipment capable of emitting high-energy radiation, registration of ownership with your provincial government is required. You must submit plans for structural protection to the provincial government and request approval, for which both the owner of the device and the owner of the building are responsible. You must identify an individual formally trained and qualified to exercise supervision of the operation and to take responsibility for safe performance. It will be an obligation of this individual to satisfy the Chief Inspector by exposure rate measurements or other suitable documentation proving that the operation is safe.

Projects involving voltages above 10kV should be considered to pose a potential x-ray hazard. Lasers may not be operated during public viewing periods.

Microorganism safety and bio-hazards

5. The following hazardous biological materials may not be displayed at the CWSF:
 - Radio-isotopes or compounds containing radio-isotopes at activities above normal background.
 - Biological toxins.
 - Microorganisms. The use of mixed cultures obtained from the environment (e.g. soils, mouth swabs) are acceptable for experimentation, but not for display.
 - Cells or tissues infected with animal or plant viruses.
2. No cultures are allowed for exhibition. Photographs or simulated cultures may be used.
3. Experimentation involving hazardous materials must be carried out under controlled laboratory conditions and supervision. The name and qualifications of the supervisor should be specified.
4. Experimental manipulations of recombinant DNA molecules or animal viruses must be carried out only under strict and direct supervision of a person qualified in the appropriate protocols. A letter from the supervisor attesting to his or her qualifications and the security of the procedures followed is to be presented during the safety inspections, and available during judging.
5. No plant tissue, soil or decomposable material shall be exhibited at a CWSF. The purpose of this prohibition is to prevent the spread across the country of micro-organisms which may inhabit soils or plants. Finished or milled lumber is permissible, while wood with bark is not. Specimens sealed in microscope slides are permissible. Fruit and vegetables, whether raw, dried, or cooked, are not permissible. Plant leaves which are thoroughly dried and sealed through lamination are acceptable. Dried grains and seeds are acceptable as are baked goods if protected from mold.

Please note: The following page is the Safety Checklist which will be used in the project safety checks for the CWSF 2001 in Kingston. Please ensure that your project meets all the following regulations:

PROJECT SAFETY CHECKLIST - CWSF 2001

Area	Specifics	Passed	Concern
Dimensions	Entire exhibit fits within a space 1.2 m wide x 0.8 m deep x 3.5 m high (from the floor)		
Backboard Materials	Backboard is constructed of wood or wood products of at least 1/4' thickness, coroplast, or is a ULC-approved display board		
	Panels decorated with paper that is securely applied so that minimal air pockets are left behind the paper		
	Overlapping or loose sheets of paper are stored in a data book or binder		
General	Exhibit is sturdy and self supporting		
	Moving parts such as belts, pulleys and propeller blades are guarded		
	All sharp edges or corners on prisms, mirrors, enclosures, and glass/metal plates are removed or protected		
	Pressure vessels have a safety valve - no compressed gas cylinders		
Fire	Combustible materials are away from heat sources		
Chemical	Substitutes used are labeled as 'simulated'		
Electrical	Low voltage; ground fault interrupter for leaks/faults		
	Insulating grommets required at points of entry to enclosures		
	Electrical appliances are CSA or UL approved or have 3-wire conductor with ground		
	Exposed live parts are less than 36 volts; current (amperage) is low so as not to cause discomfort or danger if touched		
	Non-current carrying metal parts are grounded		
	Wet cells are not on display		
X-Rays or Radiation	Registration of ownership with student's provincial government		
	All voltages used are less than 10 kV		
Bio-hazards	Radioisotopes or compounds containing radioisotopes are below normal background		
	Biological toxins or microorganisms are not on display		
	Cells or tissues infected with animal or plant viruses are not on display		
	Plant/soil/materials which could decompose are not on display		

Approved: _____

Date: _____

REGULATIONS FOR ANIMAL EXPERIMENTATION IN SCIENCE FAIRS

Preface

Regulations pertaining to projects involving animals and the display of those projects reflect different standards. While students' investigations of biological processes are to be encouraged, they are subject to the same laws, ethics and regulations as any other research. In the Criminal Code of Canada, the Animals for Research Act of Ontario, and similar legislation in other provinces, all vertebrates are afforded protection. Also, schools and science fairs are explicitly included in the definition of "research facility" in Ontario. The regulations below are written in view of these laws.

The display of a project is further restricted by YSF Canada in view of the need to maintain a positive public image towards science fairs. The restriction is due in part to a lack of essential expertise on the part of the student investigators and their immediate supervisors. There is also a desire to maximize the efficiency of animal use and to impress this upon the students, especially regarding scientific merit.

Regulations

All research involving animals should be screened by a committee cognizant of current regulations in the student's province/territory. If such a committee is not readily available, or is unsure of certain aspects of an idea, please write or call YSF Canada. Your request will be passed on to an appropriate authority for guidance and suggestions. Some assistance may also be obtained directly from the Canadian Council on Animal Care, 350 Albert Street, Suite 315, Ottawa, Ontario K1R 1A4, Tel: (613) 238-4031.

Lower orders of life (bacteria, fungi, protozoa, insects, plants and invertebrate animals) can be used in experimentation to reveal valuable basic biological information.

Vertebrate animals (birds, fish, mammals, reptiles, amphibians) are not to be used in any active experiments which may be deleterious to the health, comfort or physical integrity of the animals.

This permits observation of wild animals, animals in zoological parks, farm animals and pets. Only animals

acquired from biological supply houses may be used in "experiments". Animals from pet stores (or from one's own breeding program) cannot be used for these purposes.

Observation of wild animals falls within the definition of hunting in some jurisdictions. Students should obtain advice and permission from conservation authorities to ensure that they are not interfering with the animal's life, and to ensure that their project is permissible. A permit may be required. Behavioural experiments with positive rewards are permissible only if the animal is not placed in a stress situation. Training an animal to travel through a maze to receive a food reward is stressful, particularly if the animal is hungry, and is therefore not permissible. However, allowing an animal to make a free choice (of food, for example) is permissible, so long as the animal is not stressed before offering the choice (e.g. by withholding food).

Cells and animal parts (including organs, tissues, plasma or serum) purchased or acquired from biological supply houses or research facilities may be used in science fair projects. Evidence of the source of the materials (e.g. bill of sale) must be available at the display.

Studies of chick embryos are similarly restricted to observation, without intervention with drugs or other chemicals, or manipulation of physical condition to test the resilience of the animal. If eggs are hatched, the chicks must be reared normally. Otherwise all embryos must be destroyed by freezing by the 18th day of incubation.

The acquisition of animal parts should involve either the services of biological supply houses or research facilities, or involve salvage from sources where the animal has been killed for other legitimate purposes in a legal and humane manner. Salvage from found carcasses (e.g. road kills) is discouraged due to serious health risks. If the acquisition involves salvage from a research project, then the disposition to the science fair project must be part of the original research proposal, and such disposition must have been approved by the Research Committee or the Animal Care Committee of the institution involved. Reference to the original project should be made on the science project display.

EXHIBITORS' RESPONSIBILITIES

Conduct

Student exhibitors are responsible for their behaviour at the CWSF and must follow the rules set forth by the adults-in-charge who accompany them from Regional Science Fairs to the CWSF and by the CWSF Host Committee. Failure to meet these standards of conduct can result in the exhibitor being sent home at his/her own expense.

Any exhibitor who experiences any incident that he or she feels is unwelcome or inappropriate is requested to immediately report the matter to their Regional Science Fair delegate or to a CWSF Host Committee member. You can be assured that any complaint will be investigated immediately.

Disqualification

Disqualification may occur prior to or at any time during and after the fair.

Reasons for disqualification of a project include, but are not limited to: incorrigible safety and size violations; violation of animal use regulations or ethical violations in the use of human subjects; and/or plagiarism.

Students may be disqualified from the fair for conduct injurious to the moral tone of the fair and/or behaviour which puts other people or their property at risk.

Any student disqualified after the fair will forfeit all prizes and monies awarded to him/her. All awards and monies shall be forwarded promptly to YSF Canada, without further recourse.

At the fair

Exhibitors are expected to be present for the entire week of the CWSF. Late arrivals and early departures are only by permission of the chair of the National Science Fair Committee.

An exhibitor must be in attendance at his/her display at all times during the period that the CWSF is open to the general public, unless a special arrangement is made with the CWSF officials responsible for exhibits.

Each exhibitor is expected to attend all tours and events which are part of the planned program of the CWSF.

It will be the exhibitor's responsibility to:

- ship or bring all light bulbs, switches, motors, fans, or other apparatus or material necessary for the final presentation of the project (other than whatever the Host Committee may be willing to secure, when formally requested in advance).
- assemble the project at the fair, in as short a time as is practicable (provisions cannot be made for the redesign, completion, or rebuilding of projects at the fair).
- repair or replace anything in the project which fails during the fair (wherever possible, spare parts should be packed with the project)
- provide all tools, equipment or material necessary for assembling the project.
- have all project summaries and forms rendered in their final form by the registration deadline of **April 17.**

The exhibitor may not hang any portion of the project, nor affix any posters, graphs, etc. from or to the walls or ceilings of the building in which the fair is housed. It is for this reason that students must provide their own backboards.

Exhibit Dimensions: All exhibits, including all accessories, must be confined to a table or floor space not to exceed 0.8 meters, front to back; 1.2 meters side to side; and 3.5 meters maximum height from the floor. All measurements will be made from the outermost points including framework and appendages and will be checked by the Host Committee. Exhibits exceeding these dimensions must be modified or will not be accepted. Some exceptions apply (as per Policy, Procedures and Guidelines Manual, Section 4), ask your Regional Science Fair delegate for details.

The Host Committee will provide:

- space in which to set up the project.
- a table and one chair beside the project space (extra chairs will be available in the room for projects with partners).
- a source of 110 volt AC near the project space (if extension cords are needed, the exhibitor must provide them).
- storage space for packing cases, etc., during the fair.
- certain special apparatus only if sufficient advance notice has been given by the exhibitors concerned and if the Host Committee is able to provide them (any such apparatus provided must be paid for by the Regional Science Fair and/or exhibitor).

CHOOSING YOUR TOURS

There are two days of tours planned at the CWSF 2001. The first are local tours of Kingston, the University as well as research and industrial sites. These tours are already set for each participant, and are scheduled for the afternoon of Monday, May 14. The second set of tours occur all day Thursday, May 17. These tours are listed below.

Thursday, May 17 – All-Day Tours: There are sixteen (16) possible tours from which to choose. Each tour is an all-day excursion to a point of interest in Eastern Ontario. Indicate your order of preference for these tours by filling in your top four tour choices in the “Tours and Activities” section of Form A. Positions will be filled on a “first come-first serve” basis.

***Note: You will be more likely to get the tour or activity of your choice if your delegation registers early at our website:**

www.cwsf2001.org

Thursday, May 17, 2001 - Science Fair Tours

#	Tour Name	Description
1	Ottawa - The Historical Tour	Visit our Nation’s Capital. Take a tour of the Parliament Buildings and visit the home of our Governor General. The adventuresome can climb to the top of the Peace Tower. Learn about Canada’s military past with a visit to the War Museum. See part of the Avro Arrow and a replica of the Silver Dart at the Aviation Museum. (maximum 55)
2	Ottawa - The Museum Tour	The Parliament Buildings, the Peace Tower and Rideau Hall are musts for visitors to our Nation’s capital. After lunch and a visit to Byward Market you will enjoy a guided tour of the Aviation Museum and then have plenty of time to explore the museum on your own to see Canada’s history in flight. See part of the Avro Arrow and a replica of the Silver Dart plus airplanes from all eras of Canada’s past. (maximum 47)
3	Ottawa -The Overview of Canada’s National Capital	At the Museum of Civilization in Hull, Quebec you will see one of the most fascinating museums in the world. Take a tour of the Parliament Buildings and visit the home of our Governor General. The adventuresome can climb to the top of the Peace Tower. (maximum 56)
4	Ottawa - The Science Tour	Visit the Museum of Natural Science in our Nation’s capital. Take a tour of the Parliament Buildings and visit the home of our Governor General. The adventuresome can climb to the top of the Peace Tower. (maximum 47)
5	Gould Lake - Canoeing	Enjoy a pleasant trip in a canoe, paddling in rhythm, portaging from one section of a waterway to another, landing and stopping on an island for lunch and then continuing your journey homeward. * Although lifejackets will be worn at all times in the water, it is advised that participants have some swimming experience for this trip. (maximum 30) Requires that Form J be completed if participant is under 21 years of age.

6	Gould Lake - A Visit Back in Time	Imagine being a voyageur in early Canada. Journey in a 20 person voyageur canoe as you travel back into time. Work as a team manoeuvring this large vessel along the shores and narrow straits. Learn more about how the early fur traders lived and journeyed. (maximum 20) Requires that <u>Form J</u> be completed if participant is under 21 years of age.
7	Gould Lake - A Day With Geology	Visit a crater, learn about the limestone formations that make up much of the Canadian shield area north of Kingston and hike to an old Mica mine. (maximum 45)
8	Gould Lake - Spelunking	Do you like small, dark, narrow, low hanging spaces? Only the daring will want to enter the caves near Belleville and enjoy the adventuresome sport of spelunking. If you choose this tour, wear old clothing, bring a change of clothing and prepared to get dirty and wet. If a wet week before the Fair prevents us from offering this trip the participants will visit Gould Lake for a day of canoeing and on land cooperative challenges. (maximum 25) Requires that <u>Form J</u> be completed if participant is under 21 years of age.
9	Mariners in Kingston Harbour	Kingston has a rich Marine history. Go for a half day sail on the St. Lawrence II, a reproduction of the original Tall Ships. Spend the other half day visiting the Marine Museum which tells the story of early shipping on the Great Lakes, a genuine lifeguard ship, the Alexander Henry and a working steam engine at the Pump House Museum. *participants must be at least 13 years of age (2x32 participants) Requires that <u>Form J</u> be completed if participant is under 21 years of age.
10	A Step Back in Time	Spend the day learning about the early industries of the region. Participate in three interactive modules at McLaughlin Lumber Museum and then travel to the Museum of Communication and Technology to learn more about one of the major industries of Kingston - the Canadian military. Visit the Blockhouse and locks at Kingston Mills to see first hand how the locks were built and how the soldiers who worked on and guarded the locks lived. (47 maximum)
11	Rideau Canal	Your bus will take you to Smith Falls where you will learn about the historic Rideau Canal which connects Kingston to Ottawa through a series of human-made locks and dams. Find more about the region by visiting the Heritage Museum and then before leaving Smith Falls treat your sweet tooth with a visit to the Hershey Chocolate Factory. On the way home you will return to the Rideau Canal theme by visiting one of the most picturesque lock stations at Jones Falls. (47 maximum)
12	Bay of Quinte/Air Base	The highlight of this tour will be a tour of the Canadian Air Force Base at Trenton. Also on this tour you will travel to the famous Picton Beach and walk along the many kilometres of sand dunes. A trip on the Glengarry Ferry adds an additional dimension to an already exciting day. (47 maximum)
13	Sir John A Lives Here	Share the hometown of the first Prime Minister of Canada. Visit his homes including his most famous, the National Historic Site - Bellevue House. Visit his statues and his gravesite. Learn more about Macdonald, the man and Kingston, his town. (40 maximum)

14	Great Lakes/Wolfe Island	Enjoy the beauty of Lake Ontario as you enjoy a ferry ride to Wolfe Island. While on the island visit an outdoor education centre where you will participate in hands-on science activities. Upon arriving back on land you can visit historic downtown Kingston with a visit to the historic city hall and the Marine Museum. (maximum 30 participants)
15	Kingston - 19 th Century	Start the day at the Archeological Centre where you will participate in hands-on activities to learn one way of learning about the past. Visit Bellevue house, one of the homes of the first Prime Minister of Canada, to see an unusual architectural style of the time. After eating your lunch in Sir John A's courtyard you will travel to the prison museum where you will witness for yourself the often harsh punishments at the first penitentiary in Canada. On the way back to the campus you will visit a Martello Tower built to protect Kingston in the 19 th century. (maximum 30 participants)
16	Military Tour	Kingston began as a 17 th century French fur-trading fort, and later became a English military garrison. Throughout its entire history it has had a strong military presence. Follow its military history with a trip to see its French beginnings at Fort Frontenac. Continue with visits to the British presence at Fort Henry, a blockhouse along the Rideau Canal at Kingston Mills and the military museum, Fort Frederick at the Royal Military College of Canada. (maximum 2x20 participants)

Any alterations to the tours listed here will be posted on the CWSF 2001 web page at: www.cwsf2001.org

ANSWERS TO FREQUENTLY ASKED QUESTIONS

Q- What will the weather be like in Kingston in May?

A- The weather can be warm and dry (up to 20°C) however it can also be cold and wet. Please come prepared for a variety of weather conditions.

Q- Will there be vegetarian food?

A- Yes, the cafeterias have many vegetarian options.

Q- Are parents able to attend the Canada-Wide Science fair events?

A- Parents are welcome at the Awards Ceremony, however they must find their own accommodation in Kingston.

Q- Will there be busses running between events during the week?

A- Most of the events will happen on the Queen's University campus and therefore students will travel on foot. The residences are very close to the exhibit hall. Students will be bussed to any off site activities.

Q- Is the site wheelchair accessible?

A- Yes the site is fully accessible. Please, however, contact the Host Committee prior to the Fair if you have special needs.

Q- Can I choose my roommate in residence?

A- Yes, please talk to your regional delegate if you have any specific requests.

Q- Will we be able to call home?

A- The residences are equipped with phones in every room, as well as pay phones in the hallways. If you wish to make long distance calls from your room, you must have a calling card.

Q- Am I only allowed to take one tour on the Thursday?

A- Yes, each of the tours will fill a full day. Please indicate your top 4 choices on Form A and we will accommodate requests on a first-come first-serve basis.

Q- Will there be security for the projects in the evening?

A- Yes there is 24-hour security provided in the Exhibit Hall.

Q- Will there be Internet access during the CWSF?

A- Yes there will be an Internet Cafe in the Exhibit Hall. If you have an Ethernet card in a personal laptop computer you may also use the Internet from the residence rooms at Queen's University.

Q- Can I register Online?

A- Yes! We would prefer that all participants register online, if possible, at www.cwsf2001.org. If you are not able to register over the Internet, mail in registration is also acceptable.

Q- What if I need a computer for my project?

A. Special requests for equipment of any kind must be made to the Host Committee well in advance of the Fair (cwsf@post.queensu.ca or 613-533-6755). The Host Committee will try to accommodate where possible, but exhibitors are encouraged to make their own arrangements for any equipment.

Q- Do regions have to send a delegate of each gender if there are participating students of each gender?

A- No. The residences and activities will be coordinated so that there will be adequate supervision available of both genders, regional delegates will share this responsibility.

