

Participant Handbook  
of the  
**KODIAK ISLAND**  
**Rural Science Fair '03-'04**

sponsored by the

Kodiak Island Borough School District  
With support from the  
Alaska Rural Systemic Initiative/ Alaska Federation of Natives  
Kodiak Archipelago's Youth Area Watch

January 21-23, 2004  
in  
Old Harbor, Alaska

For more information contact:

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**Teachers and Students:**

The Kodiak Island Borough School District would like to invite you and your students to the Kodiak Island Rural Science Fair for the 2003-2004 school year. The fair will be held in the community of Old Harbor, beginning Wednesday, January 21, ending on Friday,

January 23. Students will set up their projects anytime between noon and 5 p.m. on Wednesday, with opening ceremonies beginning at 6 p.m. Judging may begin that same evening, if necessary, and continue throughout Thursday. Participants will return to their home communities on Friday.

If you have a group of students or belong to an organization who would like to make a science focused presentation during the fair, please contact me soon! What a great time to highlight their work while promoting scientific inquiry!

Each community must determine criteria for sending local representatives to the regional fair. Please consider regional categories and criteria in determining local criteria, though this should not limit what you make of this fair for your site. Each community may enter up to six (6) projects, though funding will be provided for only four students and one chaperone from each site. This would allow for a "hometown" advantage for the hosting community, as well as invite communities to fund some of the students/projects to be entered.

Any student of the Kodiak Island Borough School District and those who participated in the Academy of Elders/Science camp who are in grades K-12 may be eligible to participate in this regional science fair. PLEASE REVIEW OUR DISTRICT'S TRAVEL POLICIES AND PAST PRACTICES OF YOUR COMMUNITY. Our district is hesitant to send very young children traveling beyond their home village. If unable to travel, students are invited to send in their project for display and/or judging. Once again, funding will be provided by the District to sponsor four students and one chaperone from each community site. Other participants may travel if other funding is provided from your community's resources. *Only six projects may be entered from any one community.*

Up to four participants and one chaperone who are selected to represent your school, in cooperation with your school's head teacher/principal, will have travel arrangements made for them. Meals are being provided with funds secured by the Rural Schools Office. Additional participants and chaperones are responsible for their own travel to and from the event. Students must bring a sleeping bag as they will sleep in the Old Harbor School classrooms with chaperones.

I look forward to seeing you in Old Harbor on the 21st of January!

Teri Schneider  
Coordinator

### **Tentative Agenda**

Location: All activities will take place at the Old Harbor School

**Wednesday, January 21**

Noon-4:30 p.m.	Participant check-in and project set up
4:30-5:00	Science fair committee review of exhibits
5:00-6:00	Participant dinner and public viewing of projects
6:00-8:00	Opening ceremony and other presentations

### **Thursday, January 22**

7:30 a.m.	Breakfast for guests
8:00	Students rotate throughout science focus activities
8:00-8:30	Judges' briefing
8:30-11:45	Judging of collections and demonstration projects takes place
11:45-12:45p.m.	Lunch breaks
12:45-2:45	Students continue rotation through science focus activities
12:45-4:00	Judging of experiments takes place
4:00-5:00	Judges consult with coordinator to tally points
5:00-8:00	Potluck Dinner and Awards Assembly Presentations Public viewing of projects with ribbons
8:00-10:00	Participants take down projects Social events for students

### **Friday, January 24**

7:30 a.m.	Breakfast for guests
9:00 a.m.	Guests begin to travel home

### **Eligibility Requirements**

K–12 students in the Kodiak Island Borough School District who are approved to travel by their principal and students who attended the Academy of Elders/Science Camp are eligible to compete. Students not attending may send in projects via mail or a chaperone for viewing and judging based on its merits presented.

### **Limitations**

Each student may enter only one project. Team projects may have a maximum of three members. Science fair exhibits must adhere to science fair safety and size requirements (see display and safety regulations).

## Requirements

**Each student or team in grades 9 through 12** must submit a (maximum) 250-word, one page abstract, which summarizes this year's work. The abstract must describe research conducted by the student or team, NOT by adult supervisors.

**Each student or team in grades 9 through 12** should display a project data book or journal. The abstract must be included in the data book.

**Each student** must have a teacher, an expert (could be a scientist) in the field, and an elder review his/her project, fill out the Alutiiq Cultural Values Checklist, and sign it. The checklist should be included with the display.

**All students** must adhere to display and safety regulation and return all completed forms by Jan.20:

- Project Registration form
- Participation Information form
- Liability for Exhibits/Publicity form
- Checklist from Adult Sponsor
- Checklist from Teacher and/or Expert in the Field
- Checklist from Elder

**Important:** All forms must be received by Teri Schneider by end of the day Jan 19th. Faxing your forms (486-9085) is acceptable.

## Judging

There are two sets of judges:

- A. Elders/Community members of the Alutiiq region** will review the projects for their alignment with Alutiiq values and for their contribution/application to the student's village/community:
1. How well did the student's project and/or presentation maintain or reflect the Alutiiq values?
  2. Is the project meaningful to or reflective of Alutiiq/Kodiak culture?
  3. Is the project meaningful to the physical environment of the student's community?

**B. Teachers/scientists will evaluate:**

1. How well a student followed the scientific method?
  - a. Creative ability
  - b. Scientific thought/engineering goals
2. Detail and accuracy of research journal and /or procedure
  - a. Thoroughness
  - b. Presentation of judges
  - c. Skill in using equipment in the best possible way

Overall, judges will look for well thought-out research. They will look at how significant your project is in its field and to the village community. They will look for thoroughness. Did you leave something out? Judges will applaud students who can speak freely and confidently about their research. They are not interested in memorized speeches—they simply want to TALK with you about your research to see if you have a good grasp of your project from start to finish. Besides asking the obvious questions, judges often ask questions outside the normal scope to test your insight into research such as “Why did you pick this project?” and “What would be your next step?”

### **Team Projects**

Each team may have a maximum of three members. Each member of the team should be able to serve as spokesperson, be fully involved with the project, and be familiar with all aspects of the project. If all members are not in attendance at the Fair in Old Harbor, then a paper should be available which supports each team member’s involvement with the project. This paper should be included in the data book. A new member may not be added to a continuing team project.

The final work should reflect the coordinated efforts of all team members and will be evaluated using the same rules and similar judging criteria as the other content categories. The team jointly submits one abstract and one research plan (in the registration form) that outlines each person’s tasks. Names of all team members must appear on the abstract and forms. A copy of the abstract and research plan should appear in the data book with the project.

### **Who’s Involved in a Science Project?**

#### **The Adult Sponsor**

An adult sponsor may be a teacher, parent or other adult family member, university professor, or scientist with whom the student is working. This individual should have close contact with the student during the course of the project.

The adult sponsor is ultimately responsible not only for the health and safety of the student conducting the research, but also for the humans or animals used as subjects. The adult sponsor must review the student’s research plan to make sure that; a) experimentation is done maintaining the Alutiiq values, and; b) that forms are completed by other adults involved in approving this experiment (a science teacher or expert in the field, and an elder in the community).

The adult sponsor must be familiar with the regulations that govern potentially dangerous research as they apply to a specific student project. These may include chemical and equipment usage, experimental techniques, research involving human or nonhuman animals, and cell cultures, microorganisms, or animal tissues. The issues must be discussed with the student when drafting the research plan. Some experiments, involve procedures or materials that are regulated by state and federal laws. If not thoroughly familiar with the regulations, the adult sponsor should help the student enlist the aid of a qualified scientist.

The adult sponsor is responsible for making sure that the student's research and project are eligible for entry in Kodiak Island Rural Science Fair and, also if awarded the opportunity to enter the Alaska Native Engineering Science Fair or Alaska State Fair.

### **Project Review Committee**

All projects must be reviewed by three individuals: the adult sponsor, a teacher or expert in the field, and an Elder from the community.

If the project is behavioral, a psychologist, counselor or individual with human behavioral training must serve on the project review committee. If the student is using human subjects under 18, the student researchers must obtain written informed consent from all subjects and their parent or guardian. Consent forms should be included in the project's data book.

A fourth member should always be available to substitute on the student's project review committee, if needed. None of the student's project review committee members may serve on the Kodiak Island Rural Science Review Committee. This eliminates conflict of interest.

### **Kodiak Island Science Review Committee**

Teri Schneider, (907) 486-9276

An Elder representative

A science judge

The Kodiak Island Science Review Committee examines projects prior to judging. The committee will look for:

1. The abstract (required for 9-12th grade only)
2. Type and amount of supervision
3. Use of accepted research techniques
4. Completed forms and signatures
5. Humane treatment of animals
6. Compliance with Alutiiq Values
7. Appropriate use of DNA, pathogenic organisms, and controlled substances (when or if applies)

### **A Top-notch Science Project should include:**

### **Project Data Book/ Journal**

A project data book is a most critical piece of work. Good notes show consistency and thoroughness to the judges and help when writing the abstract (grades 9-12).

REMINDER: This is checked by the science review committee and judges.

Include your abstract, copies of consent forms (if needed), copies of the Alutiiq checklist with signatures, and data sheets/ notes for collection of data.

### **Visual Display**

Your goal is to attract and inform. Make it easy for interested spectators and judges to assess your study and the results you obtained. Make the most of your space using clear and concise displays. Make headings stand out, draw graphs, and diagrams clearly and label them correctly. You would be surprised how often visuals are mislabeled so pay careful attention.

Use a display board that stands alone with three panels. Clearly label your title, statement of purpose or hypothesis, materials used, procedure, results, and conclusion. Use models, photographs, or drawings if appropriate. Make your display board logically presented, easy to read, and eye-catching. Be sure to adhere to the size limitations and safety rules when displaying your project. Do not hesitate to ask for advice from adults if you need it. Remind your sponsor to check the display rules.

### **Abstract (Grades 9-12 only)**

After finishing your research and experimentation, you are required to write a (maximum) 250-word abstract if you are in grades 9 through 12. An abstract is a summary of the whole project. It should begin with the objectives or purpose of the project followed by the methods and the materials used to carry out the project. It should conclude with the results obtained (in summary form) and/or the conclusions drawn. Use a separate sheet of paper. It must be no longer than 250 words. NOTE: A COPY OF YOUR ABSTRACT MUST BE DISPLAYED WITH YOUR EXHIBIT. Also, include in your data book or journal.

### **Display and Safety Regulations**

#### **Size of Project Space**

Project space is limited to:

76 cm (30 in) deep

122 cm (48 in) wide

274 cm (108 in) high, including table

Any exhibit exceeding these dimensions may be eliminated.

Exhibits may be smaller.

#### **Acceptable for Display & Operation with Restrictions**

1. Class II lasers:

- a. must be student operated
  - b. posted sign must read "Laser radiation: Do Not Stare into Beam"
  - c. must have protective housing that prevents access to beam
  - d. must be disconnected when not operating.
2. Large vacuum tubes or dangerous ray-generating devices must be shielded properly.
  3. Pressurized tanks that contained non-combustibles may be allowed if secured.
  4. Any apparatus producing temperatures that will cause physical burns must be adequately insulated.
  5. High-voltage equipment must be shielded with a grounded metal box or cage to prevent accidental contact.
  6. High-voltage wiring, switches, and metal parts must have adequate insulation and overload safety factor, and must be inaccessible to others.
  7. Electric circuits for 110-volt AC must have a nine foot (min.) cord. The cord must have sufficient load-carrying capacity and be approved by Underwriters Laboratories
  8. Electrical connections in 110-volt AC circuits must be soldered or made with approved connectors. Connecting wires must be insulated. Greater than 110 volts not permitted.
  9. Bare wire and exposed knife switches may be used only in circuits of 12 volts or less; otherwise, standard enclosed switches are required.

#### **Unacceptable for Display**

1. Living organisms (we recommend photographs or drawings in place of living organisms)
2. Preserved vertebrate or invertebrate animals (includes embryos)
3. Soil or waste samples
4. Sharp stems (i.e., syringes, needles, pipettes)
5. Flammable or hazardous chemicals
6. Poisons, drugs, controlled substances
7. Dry ice
8. Flames or highly flammable display materials
9. Tanks that have contained combustible liquids or gases, unless purged with carbon dioxide
10. Batteries with open top cells
11. Awards, medals, business cards, flags, etc.
12. Hand-outs to judges must be limited to one page narratives related to the essentials of this year's project. Personal accomplishments, acknowledgments, addresses, phone and fax numbers are not permitted.

#### **Acceptable for Display Only (cannot be operated)**

1. Projects with unshielded belts, pulleys, chains, and moving parts with tension or pinch points



2. Class III and IV lasers
3. Any device requiring over 110 volts

## Category Codes/Description

The adult sponsor must decide in which category the student is competing.

BE = Behavioral and Social Sciences

Human and animal behaviors, social and community relationships: psychology, sociology, anthropology, archaeology, ethology, ethnology, linguistics, animal behavior (learned or instinctive), learning perception, urban problems, reading problems, public opinion surveys, educational testing, etc.

BI/MI = Biochemistry & Microbiology

Biochemistry includes chemistry of life processes, molecular biology, molecular genetics, enzymes, photosynthesis, blood chemistry, protein chemistry, food chemistry. Microbiology includes biology of microorganisms, bacteriology, virology, yeast, etc.

BO = Botany

Study of plants, agriculture agronomy, horticulture, forestry, plant anatomy, etc.

CH = Chemistry

Study of nature and composition of matter and laws governing physical chemistry, organic chemistry, materials, plastics, fuels, pesticides, metallurgy, soil chemistry, etc.

EA = Earth and Space Sciences

Geology, geophysics, physical oceanography, meteorology, atmospheric physics, seismology, petroleum, geography, numerology, topography, optical astronomy, radio astronomy, etc.

EN/CS/MA = Engineering, Computer Science/Mathematics

Engineering includes technology, projects that directly apply scientific principles to manufacturing and practical uses, civil, mechanical, aeronautical, chemical, electrical, photographic, sound, automotive, marine, heating and refrigerating, etc.

Computer Science includes new developments in software or hardware, information systems, computer systems organization, computer methodologies, and data, including structures, etc.

Mathematics includes the development of formal logical systems or various numerical and algebraic computations and the application of these principles, calculus, geometry, abstract algebra, number theory, statistics, and other topics in pure and applied math.

EV = Environmental Sciences

Study of pollution sources (air, water, and land) and their control, waste disposal, impact studies, environmental alteration (heat, light, irrigation, erosion, etc.)

ME = Medicine and Health

Study of diseases and health of humans and animals, medicine, dentistry, pharmacology, veterinary medicine, pathology, nutrition, sanitation, pediatrics, dermatology, etc.

PH = Physics

Theories, principles, and laws of governing energy and the effect of energy on matter, solid state, optics, acoustics, particle, nuclear, atomic plasma superconductivity, etc.

ZO = Zoology

Study of animals, animal genetics, ornithology, herpetology, entomology, animal ecology anatomy, paleontology, cellular physiology, animal husbandry, etc.

## **Alutiiq Values**

We are the descendants of the Sugpiaq, the Real People. Understanding our environment and events that have shaped our lives and created the culture of our ancestors is vital for our children's cultural survival. The history of our People and our place in the world is a part of who we are today. Kodiak Alutiiq must learn and pass on to younger generations our understanding of our natural world: the sky, land, water and the animals. As we meet the challenge of living in the 21st century, we must continue to live in honor of those things we value:

Our Elders

Our heritage language

Family and the kinship of our ancestors and living relatives

Ties to our homeland

A subsistence lifestyle, respectful of and sustained by the natural world

Traditional arts, skills and ingenuity

Faith and a spiritual life, from ancestral beliefs to the diverse faiths of today

Sharing: we welcome everyone

Sense of humor

Learning by doing, observing and listening

Stewardship of the animals, land, sky and waters

Trust

Our people: we are responsible for each other and ourselves  
**Respect for self, others and our environment is inherent in all of these values.**

*Native Educators of the Alutiiq Region/ Alutiiq Elder's Council/ The Alutiiq Academy of Elders*

Checklist For Adult Sponsor,

## Science Teacher/Expert in the Field or Elder

Student Name \_\_\_\_\_ Grade \_\_\_\_\_

SA = Strongly Agree      N = Neither agree nor disagree (or does not apply)  
 A = Agree                      SD = Strongly Disagree  
 D = Disagree

**In your opinion this project and the information contained within this project reflects or maintains the following values** (circle the letters that most closely fits your opinion):

Honoring Our Elders	SA	A	N	D	SD
Honoring/utilizing the heritage language of this place	SA	A	N	D	SD
Family and the kinship of our ancestors and living relatives	SA	A	N	D	SD
The Alutiiq environment and landscape	SA	A	N	D	SD
A subsistence lifestyle, respectful of and sustained by the natural world	SA	A	N	D	SD
Traditional arts, skills and ingenuity	SA	A	N	D	SD
Spiritual life/ diverse faiths	SA	A	N	D	SD
Sharing	SA	A	N	D	SD
Trust	SA	A	N	D	SD
Responsibility to others	SA	A	N	D	SD
Sense of Humor	SA	A	N	D	SD
Learning by doing, listening and observing	SA	A	N	D	SD
Stewardship of the animals, land, sky and waters	SA	A	N	D	SD
Respect for self, others and the environment	SA	A	N	D	SD

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Signature \_\_\_\_\_ Role \_\_\_\_\_ Date \_\_\_\_\_

**The Kodiak Island Rural Science Fair coordinators and hosts will support and endorse the Alutiiq Cultural values during the fair.**

Kodiak Island Rural Science Fair '03-'04

### Project Registration Form

DEADLINE: Entries must be received no later than January 19, 2004



Tribal affiliation \_\_\_\_\_

Gender: M or F

Birthdate \_\_\_\_\_

**#2 Team Member**

Name \_\_\_\_\_

Age \_\_\_\_\_

Nickname \_\_\_\_\_

Grade \_\_\_\_\_

Address \_\_\_\_\_

Home phone \_\_\_\_\_

Village \_\_\_\_\_

Zip \_\_\_\_\_

Tribal affiliation \_\_\_\_\_

Gender: M or F

Birthdate \_\_\_\_\_

**#3 Team Member**

Name \_\_\_\_\_

Age \_\_\_\_\_

Nickname \_\_\_\_\_

Grade \_\_\_\_\_

Address \_\_\_\_\_

Home phone \_\_\_\_\_

Village \_\_\_\_\_

Zip \_\_\_\_\_

Tribal affiliation \_\_\_\_\_

Gender: M or F

Birthdate \_\_\_\_\_

**Please Sign and have parent or guardian(s) sign below:**

**Liability for Exhibits**

Every effort will be made to protect your exhibit. However, since the Science Fair Exhibition will be open to the public, the Kodiak Island Rural Science Fair cannot accept any liability or responsibility of any nature for any theft of, or loss or damage to, any exhibit or any other property of any exhibitor. Accordingly, it is recommended that each exhibitor take product precautions to prevent any theft, loss or damage to his/her exhibit and/or other property. Computers should be secured with cables at all times by the exhibitor.

I have read the above paragraph, and understand and accept that the Kodiak Island Rural Science Fair cannot accept any liability or responsibility for theft or damage to any exhibit.

\_\_\_\_\_  
Single entry participant/Team member #1 signature

\_\_\_\_\_  
Parent/legal guardian signature

\_\_\_\_\_  
Team member #2 signature

\_\_\_\_\_  
Parent/legal guardian signature

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Team member #3 signature Parent/legal guardian signature

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Adult sponsor Date

**Publicity**

The Kodiak Island Rural Science Fair is a prestigious event and your presence there is newsworthy. The KIBSD and other sponsoring organizations may want to publicize their involvement in such an important science competition by using photographs or information about you. Your cooperation may make it possible for other promising young student to get involved in science.

You have my permission to use appropriate information about me for publicity purposes. This includes any photographs, videos, or likeness(es) that may be used by the Kodiak Island Borough School District and the Alaska Native Knowledge Network, and/or Alaska Rural Systemic Initiative, or other sponsors for the purposes of illustrations, advertising or publication in any manner. I also consent to the use of my name in connection therewith.

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Single entry participant/Team member #1 signature Parent/legal guardian signature

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Team member #2 signature Parent/legal guardian signature

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Team member #3 signature Parent/legal guardian signature

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Adult sponsor Date

**Types of Scientific Projects**

Collection/Observation (K-3 only)

What? When? Where?

Definition

Labels

Display

Demonstration (K-12 local, K-8 State & National)

How? When? Where? One Condition.

Statement of Purpose

Why are you doing the project?

Gather information

1. Interview—Elder/Expert
2. Literature Review—Sources of Information
3. Observation
4. Personal Experience

Build a Model (optional)

Charts, Maps, or Flowcharts

Pictures

Explanation

## Experiment (K-12)

Why?, What if? Two or more conditions. (Comparing control group to experimental group.)

Hypothesis

Sources of Information

Experimental Group(s)

Control Group

Variables

    Independent (being changed, input)

    Dependent (outcome)

Result

Charts, Graphs, Data Table (keep a journal/log)

Conclusion: Research paper?

Application: Abstract