

## Research Investigations

**Eligible Students:** all age groups

**Topic:** Unrestricted

**Closing Date:** 14th October 2009

Note: All entries are judged initially on merit alone, then any which fit the criteria of the Sponsor Topics (see below) are judged for those prizes in addition. Successful entries will be automatically entered in the national BHP Billiton Science Awards Competition ([www.scienceawards.org.au](http://www.scienceawards.org.au)) and if successful nationally, may be selected for the International Science and Engineering Fair: <http://sciserv.org/isef/primer/Index.asp>

**Topic suggestion:**

The topic may be an extension of previous classroom work, a personal interest through sport or hobbies, or in fact pretty much anything! Try Googling "Science Fair Ideas".

Projects addressing an issue of scientific significance (social, local, environmental or personal nature) are generally considered more highly by judges.

The following websites may help define questions to investigate and provide valuable ideas and support:

[http://www.sciencebuddies.org/mentoring/project\\_background\\_research\\_plan.shtml](http://www.sciencebuddies.org/mentoring/project_background_research_plan.shtml)

<http://sciserv.org/isef/primer/Index.asp>

<http://www.uow.edu.au/science/regionalssciencefair/home/sitemap.html>

<http://www.mrc.tas.edu.au/science/aburke/>

For helpful TSTS Research advice see:

[http://www.key.org.au/stat/html/talent\\_research.htm](http://www.key.org.au/stat/html/talent_research.htm) for Judges' Comments 2006/2007/2008, and other valuable suggestions.

**Follow this procedure:**

1. Choose a clearly defined topic.
2. Formulate questions about the topic (What if...? What can we discover about...? And so on.)
3. Make an hypothesis based on observations and knowledge acquired in other ways (if "this", then "?").
4. Investigate this hypothesis by completing one or more experiments or a survey.
5. Record your experimental results with tables, photos, log books, journals etc.
6. Analyse the results without bias, also discussing and accepting unexpected results.
7. Compare the analysis with the original hypothesis.
8. Compare your results with what other people have found out about this topic.
9. Write a full report as outlined below.

**How to write the report of the Research Investigation**

The details and results of your investigation must be given in a concise but comprehensive report presented in A4 format (eg. Display folder).

It should contain the following sections;

**Title:** A short title should clearly suggest the nature of the investigation.

**Abstract:** A brief (less than 100 words) summary of the investigation and its outcome. This is placed at the beginning of the report.

**Aim:** What were you trying to find out?

**Method:** Specific details (with labelled photos or diagrams) of what you did and what equipment you used including difficulties encountered and how these were overcome.

**Results**

Record all results using labelled photos, tables and graphs as appropriate. Also give a clear statement of the outcome of the investigation.

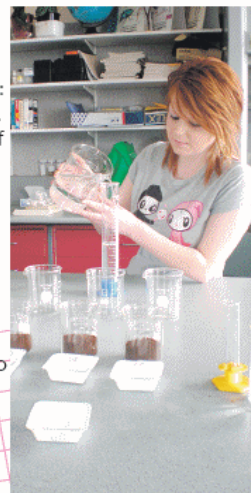
**Discussion and conclusions:** Discuss your findings, paying particular attention to any unexpected results. Include the conclusions you have drawn from your investigation. Your discussion should be a major portion of your report.

**Acknowledgements:** Refer to all sources and extent of assistance received (eg from teachers, parents, librarians etc).

**Judging Criteria**

Judging will be based on evidence of working scientifically and will include:

- Planning Investigations.
- Scientific significance of topic
- Conducting Investigations
- Processing data
- Evaluating findings
- Using science
- Acting responsibly: i.e. No explosives, illegal substances or cruelty to animals is acceptable.



Savannah Holwill, Marist RC. Real science!

## Special Awards

**Sponsor Specific Topics**

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The following sponsors award additional prizes for the best projects in their particular fields (See also Research Investigations Set Topics – page 6).

- Australian Institute of Physics **Physics**
- Hydro Tasmania **Renewable Energy**  
See [www.hydro.com.au/handson](http://www.hydro.com.au/handson)
- Tasmanian Alkaloids **Agriculture**
- AuSSI-Tas **Sustainability**
- Australian Society of Biochemistry and Molecular Biology **Biochemistry**
- Rio Tinto Alcan **Chemistry**
- World Educ'n Forum (Tas) **Climate Change**  
See [www.climatechangematters.net.au](http://www.climatechangematters.net.au)
- UTAS Dept Maths and Physic **Physics/Maths**
- UTAS School of Human Life Sciences **Human Health (Physiology)**
- TasMinerals Council **Mining-related**  
See [www.tasminerals.com.au/educational-links.pdf](http://www.tasminerals.com.au/educational-links.pdf)
- Australian Institute of Food Science and Technology **Food Science**

The Marist Regional College TSTS Research website lists many topic ideas under **subject headings**. Thanks to Ann Burke for this!

<http://www.mrc.tas.edu.au/science/aburke/>

Many of the groups who sponsor TSTS are able to offer help with your research investigation either through topic suggestion or through assistance with materials, information and guest speaker opportunities. Some also produce excellent teacher resources.

Check the websites or email the TSTS Director.

## The nation-wide search for Australia's next BHP Billiton Science Awards winner is on!



Combine your Imagination with the powers of science to explore and create innovative solutions to scientific problems – you'll have lots of fun and you could be in the running for some fantastic prizes! The BHP Billiton Science Awards are a national competition for winners of state competitions from all over Australia- there are great prizes on offer, a great science camp in Melbourne for the finalists, plus you could have the opportunity to participate in the International Science and Engineering Fair (ISEF) in Reno, Nevada, USA!

**What does this mean?**

This year BHP Billiton, CSIRO and the Australian Science Teachers Association are working with the Science Teachers Association of Tasmania, through the Tasmanian Science Talent Search (TSTS) to select finalists for the national BHP Billiton Science Awards. They will also be working with Science Teachers Associations in all other Australian States and Territories.

**How do you enter?**

To be eligible as a finalist you must first enter the research investigation in the Tasmanian Science Talent Search (Please note – whole class entries will not be eligible for the BHP Billiton awards but are still acceptable for TSTS. BHP Billiton will accept entries from individuals, pairs and groups of three.) With the exception of whole class entries you become eligible for a BHP Billiton award just by entering the research investigation in TSTS. Your project needs to involve an experimental design and show evidence of carrying out the experiment(s). Spend some time researching, investigating and exploring topics you enjoy, using the internet, library, science magazines such as Helix and Scientific and newspapers for inspiration. Your ideas could make you a winner. Follow the Research Investigation Guidelines set out above and you will have a quality Research Investigation to enter.

**What you could win:**

Sixteen BHP Billiton Science Award finalists from around Australia will enjoy a trip to Melbourne for a fun-filled four-day science camp and participate in the prestigious awards ceremony.

**Winners:**

**First Prize:** \$3,000

**Second Prize:** \$2,000

**Third Prize:** \$1,000

Thirteen entries will receive \$250

- \* Two students will compete at the ISEF in Reno Nevada USA in May of 2010
- Up to sixty semi-finalist entries will win \$100
- Up to four primary finalist entries will receive \$250
- Up to fifty primary students will receive encouragement award prize

