



How has mining changed over time?

S3 - Module 2

Program delivery

The LeadSmart modules are designed to allow flexibility for teachers and schools to tailor the delivery of the program in a way that best suits their needs. Each set of modules are designed in a way that they can be delivered in sequential order, as individual lessons, or in an arrangement of the school's choosing.

Module overview

In this module students will explore past and present lead mining activities that have occurred in Broken Hill since the town was founded over 130 years ago.

Students will work together to construct a class timeline, highlighting significant events that have helped shaped the town.

Resources

- Health hub space in your school (we encourage you to book an appropriate area in school for the duration of this module, enabling access to the technology and space required to complete the unit) Interactive Whiteboard (IWB)
- LeadSmart Education website (leadsmart.nsw.gov.au)
- Broken Hill timeline - Activity sheet – Print and cut out prior to lesson
- String
- Wooden pegs x 11
- Permanent marker

Learning intentions

Students will:

- Explore significant events that have helped shape Broken Hill as a mining town
- Construct a timeline, placing significant events in chronological order
- Identify changes in working conditions in Broken Hill mines throughout time, including the role of workers, uniforms and equipment used

Assessment

There are a number of informal assessment opportunities throughout this module including:

- Brainstorm to assess prior knowledge and experiences
- Class discussion
- Student questioning
- Student workbooks
- Observation

Differentiation

As with all of the LeadSmart Education modules, we encourage you to differentiate the following activities by making any necessary modifications in order to cater for diverse student learning needs.

Note: The suggested duration of the activities found within this module may require adjustment to cater for the needs of your students.

Curriculum links

Stage 3

History

- HT3-1 Describes and explains the significance of people, groups, places and events to the development of Australia
- HT3-3 Identifies change and continuity and describes the causes and effects of change on Australian society

English

- EN3-1A Communicates effectively for a variety of audiences and purposes using increasingly challenging topics, ideas, issues and language forms and features

Geography

- GE3-1 Describes the diverse features and characteristics of places and environments
- GE3-2 Explains interactions and connections between people, places and environments
- GE3-3 Compares and contrasts influences on the management of places and environments

Cross curriculum priorities

- Sustainability

General capabilities

- Critical and creative thinking
- Ethical understanding
- Literacy

Introduction activity: What do we already know?

10 minutes

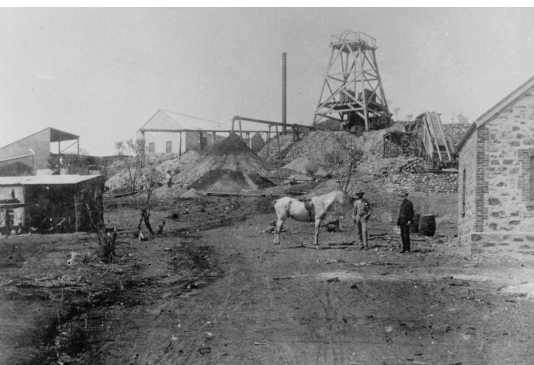
1. Explain to the students that this session will be exploring more about mining in Broken Hill. Through today's activity they will discover the importance of mining and lead to the history of Broken Hill and how conditions have changed over time to help protect workers and the entire community from the effects of lead exposure.
2. Display each of the images below on the IWB, reveal them one-by-one and ask students to identify the different features they can see.



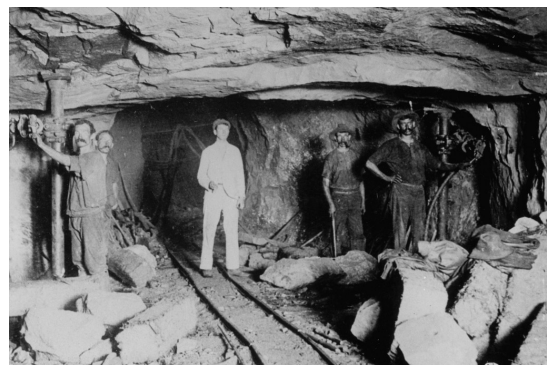
Idriess, Ion L. (1890), National Library of Australia



State Library of South Australia



State Library of South Australia

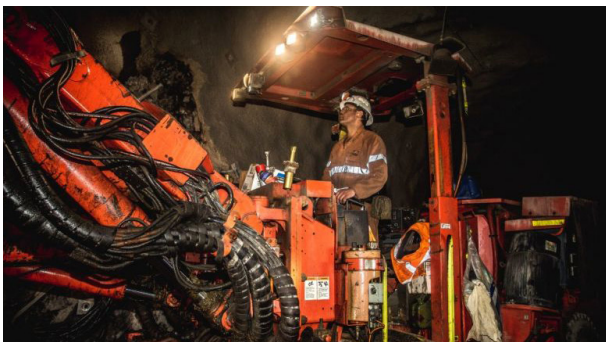


State Library of South Australia

2. Prompt students with questions such as:

- Who/What can you see in the photograph?
- When do you think the photograph was taken, why?
- What tools and equipment can you identify?
- What are the miners wearing?

3. Tell students that they are now going to look at a second set of photographs, display each of the images below on the IWB, reveal them one-by-one and ask students to again identify the different features they observe.



Activity 2: How did mining in Broken Hill change over time?

30 minutes

1. Explain to students that in order to understand mining activities and the impacts on lead exposure in Broken Hill, it is important to identify significant events from the beginning of the town to present day, that have helped shape the town.
2. Ask 11 volunteers to come to the front of the room and choose one of the information cards (printed on A4) from the pile. They will read it to the class and hold it up so it can be seen throughout the activity.
3. The rest of the class work together to decide where each volunteer will stand, either directing from their seats or coming up to (gently) physically move the volunteers, until they think they have created an accurate timeline of events. This may require multiple attempts and shuffling of students and information as the activity progresses.
4. Discuss each significant event with the class as it is revealed.
5. Once the timeline is complete, check the order with the events listed above.
6. Instruct students to record their own timeline in their workbooks, encourage them to reference the timeline they created together as a class to ensure they are recording the events in the correct order.



Teacher background information:

1883 - A man named Charles Rasp from Mt Gipps Stations rode out to a rocky area in the shape of a 'broken hill' because he thought it would be a good spot to mine tin. It turned out that this rocky area was the Line of Lode, one of the richest ore bodies of lead, silver and zinc in the world! Mining starts in the area of Broken Hill and is carried out with hand tools and horses and carts.

1885 - Broken Hill Proprietary Company (BHPC) is formed, later renamed BHP Billiton, one of the world's largest mining companies.

1883 - 1900 - No safety rules existed and lots of miners died due to lead poisoning from being exposed to dangerous lead dust and fumes. Miners worked in terrible conditions, working for hours by candle light with hammers and chisels. Accidental deaths happened a lot.

1919 - 1920 -After years of accidental deaths the miners realise they do not want to work in such bad conditions. They refuse to work for a year and a half – this was called The Great Strike- and finally, they get better pay and working conditions and are recognised as important workers.

Early 1920s - Now most of the mines on the Line of Lode have steam-powered machines to help them mine quicker and see better in the tunnels.

1936 - The people in Broken Hill are suffering from living in a dry, windy and dusty desert community. Albert Morris, a botanist (plant scientist) has the idea to plant more native trees and plants around Broken Hill to act as a barrier to the wind and dust and make living conditions better.

1940s - 1980s - Machines are now powered by diesel and are made specifically for different jobs in the mines. These machines make mining safer than ever but there is now less need for real people in the mines and lots of miners lose their jobs.

Mid to late 1990s - Metal prices go down and a lot of mine workers lose their jobs as Pasminco mining company closes.

1991 - The area planted by Albert Morris (the Regeneration Area or Reserve) is a huge success and is made a Landscape Conservation Area by the National Trust, meaning that no one can ever cut it down.

2002 - Today - Metal prices go up which means there is more need for lead, zinc and silver as people try to sell it off. Two new mining companies open in Broken Hill, one is named after the man who discovered the area. It is called the Consolidated Broken Hill (CBH) Rasp Mine. Both mines in Broken Hill – Perilya and Rasp- are busy and profitable.

Today - Now, mining in Broken Hill is safer than ever – workers must follow strict safety rules, wear special personal protective equipment and get their blood tested regularly to check lead levels in their body. Mines use modern, hi-tech equipment, huge dump trucks and specially built roads underground. The 7.5km long and 1.6 km deep Line of Lode has supported mining and the town of Broken Hill for over 130 years, making it the longest continual mining town in Australia.

Reflection activity: What did we discover?

10 minutes

1. Once students have completed their individual timelines, bring the class back together and discuss any new or surprising learning from this session.
2. Reinforce that Broken Hill is here because of the Line of Lode founded by Charles Rasp in 1883. From all the mining that has happened over the past 130 years, lead dust has got into the air and has built up in the dust, dirt and soil in around homes and public spaces. Lead doesn't belong in the human body and when it builds up it can make us sick. This means that mine industry workers and the entire community have had to become aware of ways to protect themselves from lead exposure and lead harm.
3. Encourage students to have a conversation with a family member or friend who works in the mines to discover more about the safety precautions we take now to protect ourselves from the effects of lead and lead dust.
4. Provide students with an opportunity in the future to share what they have learned from these conversations.

Timeline of mining of Broken Hill

Cut, order, and paste each event in the correct timeline sequence.

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Machines are now powered by diesel and are made specifically for different jobs in the mines. These machines make mining safer than ever but there is now less need for real people in the mines and lots of miners lose their jobs.

Metal prices go down and a lot of mine workers lose their jobs as Pasminco mining company closes.

Broken Hill Proprietary Company (BHPC) is formed, later renamed BHP Billiton, one of the world's largest mining companies.

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