

LEARNING GUIDE

TRANSFORMATIONS

WASTE MANAGEMENT

SCIENCE AND TECHNOLOGY

TSC-4064-2



IN COMPLIANCE
WITH THE
NEW PROGRAM

SOFAD

LEARNING GUIDE

TRANSFORMATIONS

WASTE MANAGEMENT

SCIENCE AND TECHNOLOGY

TSC-4064-2



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Legend: R = Right C = Centre L = Left
T = Top B = Bottom

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Table of Contents



CHAPTER 1

Ecology and Biotechnology

Introduction to Environmental Science

SITUATION 1.1

ECOTOXICOLOGY **CONTAMINATION OF SOIL, WATER AND AIR**

BIODEGRADATION OF POLLUTANTS

LS 1.1 – Remediation of Contaminated Land	4
Exploration	5
Acquisition A	7
Resolution	20
Consolidation	24

SITUATION 1.2 PRACTICAL ACTIVITY

THE ECOLOGICAL FOOTPRINT **WASTEWATER TREATMENT**

LS 1.2 – Wastewater Treatment	26
Exploration	27
Acquisition A	29
Resolution	36
Acquisition B	42
Consolidation	48

KNOWLEDGE SUMMARY

INTEGRATION

LES.....



CHAPTER 2

The Lithosphere, Hydrosphere and Atmosphere

Soil, Water and Air Ecology

SITUATION 2.1 PRACTICAL ACTIVITY

SOIL AND WATER CONTAMINATION **DEPLETION AND BUFFERING CAPACITY OF SOIL**

CATCHMENT AREA

LS 2.1 – Agricultural Waste	60
Exploration	61
Acquisition A	63
Resolution	70
Acquisition B	74
Consolidation	80

SITUATION 2.2

AIR CONTAMINATION **ATMOSPHERIC CIRCULATION: PREVAILING WINDS**

THE PHOSPHORUS CYCLE AND EUTROPHICATION

LS 2.2 – Smog	82
Exploration	83
Acquisition A	85
Resolution	90
Acquisition B	92
Consolidation	97

KNOWLEDGE SUMMARY

INTEGRATION

LES.....



CHAPTER 3

The Periodic Table

Classification of Matter

SITUATION 3.1

SIMPLIFIED ATOMIC MODEL **ATOMIC NUMBER**

RELATIVE ATOMIC MASS **ISOTOPES**

LS 3.1 – The Atom Through Time	106
Exploration	107
Acquisition A	109
Resolution	116
Acquisition B	118
Consolidation	121

SITUATION 3.2 PRACTICAL ACTIVITY

PERIODIC TABLE (GROUPS AND PERIODS) **RADIOACTIVITY**

NUCLEAR STABILITY

LS 3.2 – Scrap Metal Dealer	124
Exploration	125
Acquisition A	127
Resolution	140
Acquisition B	144
Consolidation	150

KNOWLEDGE SUMMARY	154
--------------------------------	-----

INTEGRATION	156
--------------------------	-----

LES	162
------------------	-----



CHAPTER 4

The Organization of Matter

From Elements to Compounds

SITUATION 4.1

THE RULES OF CHEMICAL NOMENCLATURE AND FORMULA WRITING **POLYATOMIC IONS**

LEWIS NOTATION

LS 4.1 – A Chemical “Controversy”	166
Exploration	167
Acquisition A	168
Resolution	176
Acquisition B	178
Consolidation	180

SITUATION 4.2 PRACTICAL ACTIVITY

THE NATURE OF BONDS **STRENGTH OF ELECTROLYTES**

NUCLEAR FISSION AND FUSION

LS 4.2 – Electrolytic Solutions.....	182
Exploration	183
Acquisition A	185
Resolution	194
Acquisition B	198
Consolidation	207

KNOWLEDGE SUMMARY	210
--------------------------------	-----

INTEGRATION	214
--------------------------	-----

LES	216
------------------	-----



CHAPTER 5

The Physical Properties of Solutions

Water, the Universal Solvent

SITUATION 5.1

CONCEPT OF MOLE AND AVOGADRO'S NUMBER CONCENTRATION IN MOL/L

PERIODICITY OF CHEMICAL PROPERTIES

LS 5.1 – In the Environmental Analysis Laboratory.....	220
Exploration	221
Acquisition A	223
Resolution	232
Acquisition B	236
Consolidation	241

SITUATION 5.2 PRACTICAL ACTIVITY

SOLUBILITY PRECIPITATION

LS 5.2 – An Unwanted Product	246
Exploration	247
Acquisition A	248
Resolution	256
Consolidation	260

KNOWLEDGE SUMMARY 262

INTEGRATION 264

LES..... 268



CHAPTER 6

Chemical Changes

Everything Is Transformed

SITUATION 6.1

ACID-BASE NEUTRALIZATION REACTIONS SALTS

OXIDATION DECOMPOSITION AND SYNTHESIS

LS 6.1 – Neutralizing Old Batteries	274
Exploration	275
Acquisition A	276
Resolution	282
Acquisition B	284
Consolidation	288

SITUATION 6.2 PRACTICAL ACTIVITY

STOICHIOMETRY

LS 6.2 – Chemical Remediation	292
Exploration	293
Acquisition A	294
Resolution	298
Consolidation	302

KNOWLEDGE SUMMARY 304

INTEGRATION 306

LES..... 308

SUPPLEMENT

SELF-EVALUATION 311

REVIEW 323

APPENDICES..... 328

GLOSSARY..... 331

ANSWER KEY 340

RUBRICS FOR THE
COMPETENCIES 395

About this Learning Guide

Welcome to the learning guide for the *Waste Management* course. This Secondary IV course in the *Science and Technology* program is intended to develop your ability to deal with situations relating to the production and elimination of waste resulting from natural resources development and their impact on the environment.

For this purpose, you will study problems or technological applications involving to:

- chemical and nuclear transformations;
- the physical properties of solutions and the organization of matter;
- contamination of the different Earth systems and the technological processes that can reduce it;
- the ecological footprint and ecotoxicology;
- waste generated by natural resources development and its impact.

You will carry out experimental activities or refer to your prior knowledge to understand or solve problems, and then clearly communicate what you have learned.

You are now invited to carry out the learning activities presented in the six chapters of this learning guide.

Portailsofad.com

Video capsules and printable versions of complementary resources for this guide and the TRANSFORMATIONS collection are available on the portailsofad.com website; they will assist you throughout this course.



CHAPTER ORGANIZATION

The learning process presented in each chapter allows you to make progress by building on what you learned in the previous sections. The following diagram illustrates this process and states the educational aim of each section.

INTRODUCTION

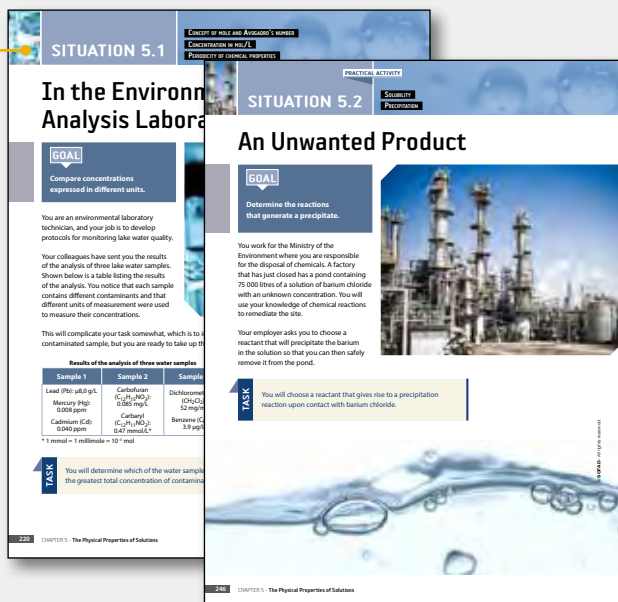
The first page describes the context and the theme that will provide the basis for learning the new concepts introduced in the chapter.



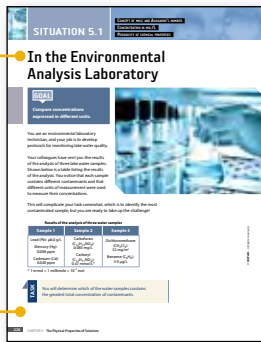
A table of contents opposite the first page presents the knowledge to be acquired in the two learning situations and the theme of each one.

SITUATIONS

There are two learning situations in each chapter: one is theoretical and the other is practical, in the form of an experiment. The learning process in both situations allows you to acquire new concepts and develop competencies within real-life, meaningful contexts.



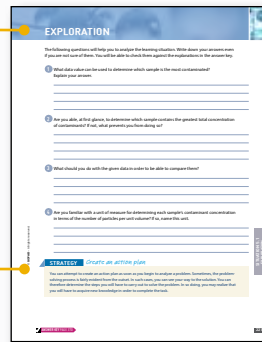
PARTS OF A LEARNING SITUATION



PRESENTATION OF THE LEARNING SITUATION

This page sets out the main theme of the chapter, briefly describes the context of the learning situation, and provides the information needed to complete the task.

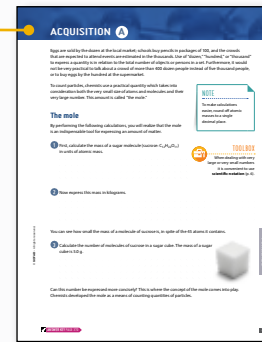
A text box describes the task to be carried out later on, in the *Resolution* section. This task is the starting point for acquiring the new knowledge that will enable you to complete it.



EXPLORATION

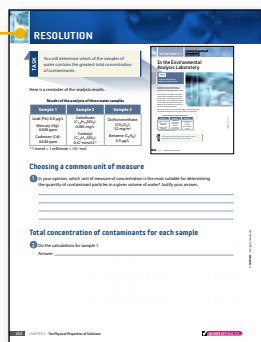
In this section you will analyze the information provided in the learning situation and identify what you already know about the topic at hand, as well as the new knowledge you will need to complete the task.

Different aspects of the investigative process in science and exploration strategies are suggested here.



ACQUISITION A

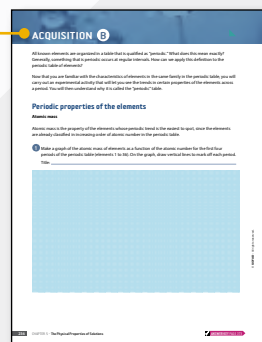
In this section, you will acquire the knowledge required to complete the task.



RESOLUTION

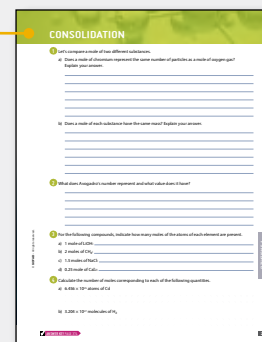
When you get to this section, you should have all the knowledge you need to complete the task described at the beginning of the chapter.

Additional elements of the investigative process in science and exploration strategies are suggested here.



ACQUISITION B

In this second *Acquisition* section, you will learn new concepts that are prescribed by the program and that are related to the concepts covered in *Acquisition A*.



CONSOLIDATION

This section allows you to put into practice the knowledge covered in *Acquisition A* and *Acquisition B*. Like the *Integration* exercises, the *Consolidation* exercises also help you to develop the competencies.

CHAPTER END...

KNOWLEDGE SUMMARY

This section summarizes all the key concepts presented in the chapter.

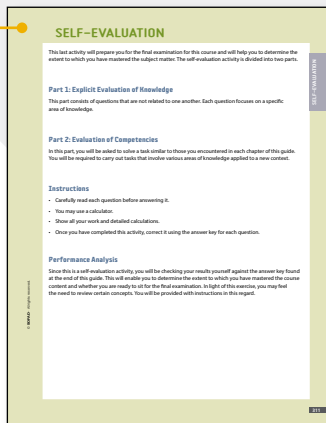
INTEGRATION

This section includes complex exercises and scenarios that require you to apply what you have learned in the chapter.

LES

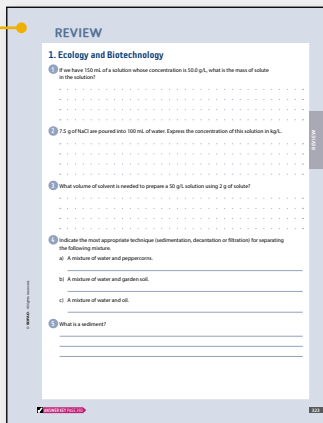
The learning and evaluation situation (*LES*) is a complex task similar to those that you will encounter in the final exam. It includes a rubric for the competencies (competency evaluation chart).

SUPPLEMENT



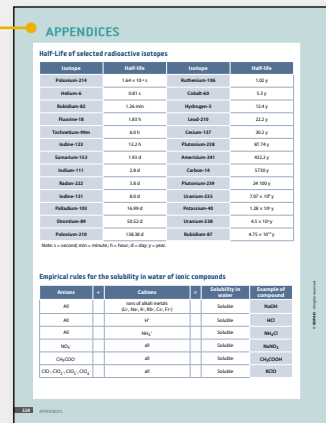
SELF-EVALUATION

A *Self-evaluation* activity is found in the first part of the *Supplement*. It is used to evaluate the knowledge you have acquired and the competencies you have developed during the course. It also helps you determine the knowledge you have mastered and the concepts you must review before doing the *Scored Synthesis Activity*.



REVIEW

While working through the *Situation* sections, you will come across *Reminder* text boxes containing knowledge that you covered in previous courses and that you will need to understand new concepts or complete the task. The *Review* section consists of questions that will help you to review the concepts appearing in the *Reminder* boxes.



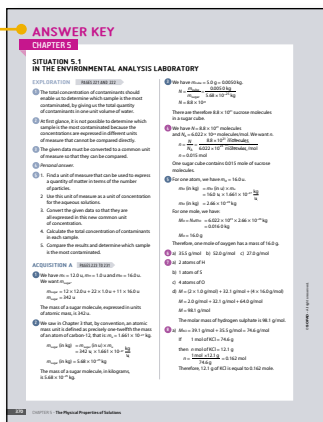
APPENDICES

In this section, you will find additional information such as abbreviations and units of measure.



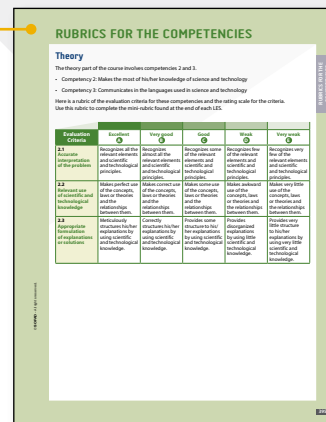
GLOSSARY

Key concepts **bolded blue** and terms **bolded black** in the body text of the chapters also appear in the *Glossary*.



ANSWER KEY

The *Answer Key* at the end of the guide will allow you to check your answers and steer you through the learning process. It contains the answers to the questions in the guide and detailed explanations regarding the correct procedure or line of reasoning to be used.



RUBRICS FOR THE COMPETENCIES

There are *Rubrics for the Competencies* at the end of the guide. After completing a learning and evaluation situation, or *LES*, you can use these rubrics to evaluate your work. You can then complete the abbreviated rubric found at the end of each *LES*.

HEADINGS

TASK

You will explain which of the two approaches to farming ...

Presents the task to be carried out as part of the learning situation.

REMINDER



REVIEW EXERCISES
PAGE XXX, NUMBERS 1 TO 3

The pH scale

pH is a measure of ...

Refers to knowledge acquired in previous courses and to review exercises related to this *Reminder*.

KEY KNOWLEDGE

Soil depletion is a decrease in the fertility of soil resulting from the loss of organic matter and nutrients.

Presents new key concepts to be learned. This knowledge is prescribed by the program of studies.

INVESTIGATIVE PROCESS

B...

The first step in the investigative process is to define the problem ...

Presents aspects of the investigative process in science that can be applied in various situations.

STRATEGY

Consider ...

When an investigative process involves forming an opinion or ...

Presents exploratory or analytical strategies that can be applied in various situations.

DID YOU KNOW?



Spring flooding in the Montérégie

In spring 2011 in the Montérégie, residents...

Encourages you to discover additional scientific, historical and cultural information related to the concepts being studied.

TIP



Upstream means in a direction opposite to that of the stream's current, whereas downstream means in the direction that a river or stream is flowing.

Gives a tip that makes the task simpler, or suggests a different approach to dealing with the problem or applying the concept in question.

NOTE

It is important to differentiate between prevailing winds and jet streams. A jet stream is a narrow band of high-altitude winds encircling the Earth ...

Gives additional information or points out exceptions that can apply to the concept in question.



TOOLKIT

See

Collecting a liquid volume.

Refers to the information found in the **Toolkit**.



LABORATORY REPORT

Read the **goal** of the experiment and the steps in the **experimental procedure** ...

Refers to information to be completed in the Experimental Activity Booklet.

SCORED ACTIVITY

You must now do Scored Activity 1. It is available on the course website ...

Indicates that you are now ready to do the *Scored Activity* that will test your understanding of what you have learned. The *Scored Synthesis Activity* is done at the very end of the course.

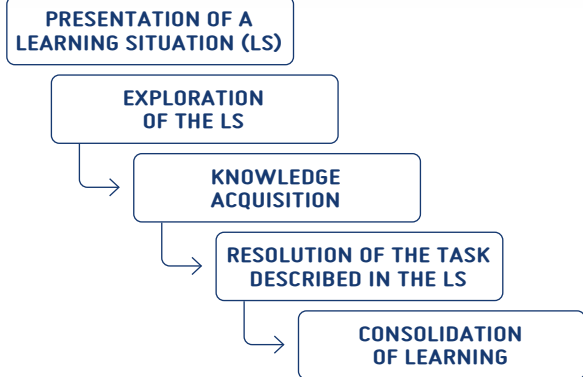
These activities are presented in separate booklets. Once you have completed them, you must submit them to your teacher or tutor, who will correct them and provide feedback.

The **TRANSFORMATIONS** collection consists of all the courses in the Diversified Basic Education Program for Secondary IV and Secondary V.



SOFAD

The courses in the **TRANSFORMATIONS** collection feature a learning process based on the acquisition of prescribed knowledge through interesting and meaningful learning situations. The instructional approach underlying this learning process is outlined below.



The knowledge and competencies to be developed become meaningful through investigations that require learners to use inductive and deductive reasoning skills. The learning guides provide a variety of simple exercises and more complex tasks that address the needs of both learners and teachers. Additional resources are available on Sofad's e-learning portal.

Components of the **TRANSFORMATIONS** collection:

- Toolkit: Print and PDF versions
- Learning Guide: Print and PDF versions
- Teaching Guide: PDF
- Video clips of concepts and laboratory techniques
- Experiment kits
- Scored activities
- Answer keys

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