Impact Assessment for Mining in Thailand: Problems and Solutions

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Introduction

- In the past the mining concession needed not the impact assessment before getting the approval.
- Minings have caused deterioration of environment and community health for more than centuries.

Introduction

- Thailand promulgated the Environmental Quality Promotion and Conservation Act in 1992 enforced certain projects including mining to conduct environmental impact assessment (EIA) as part of the process of concession.
- In 2007, Thailand enacted the health impact assessment (HIA) process to certain projects and public policies in the Constitution and the National Health Act.

Objectives

- To review the chronology of minings and their impacts on environment and health.
- To study the impacts of impact assessment (IA) process in the cases of mining.
- To propose the solutions to mitigate the impacts.

Methodology

- Literature reviews
- Stakeholder and group process

Types of Minings

- Most of minings in Thailand need environmental and health impact assessment (E&HIA) as a necessary requirement for concession approval.
- They are under the Environmental Quality Promotion and Conservation Act (1992), Constitution (2007), and the National Health Act (2007).

Open mining in Thailand

National Health Commission Office. Mining History Photo Book, 2014.

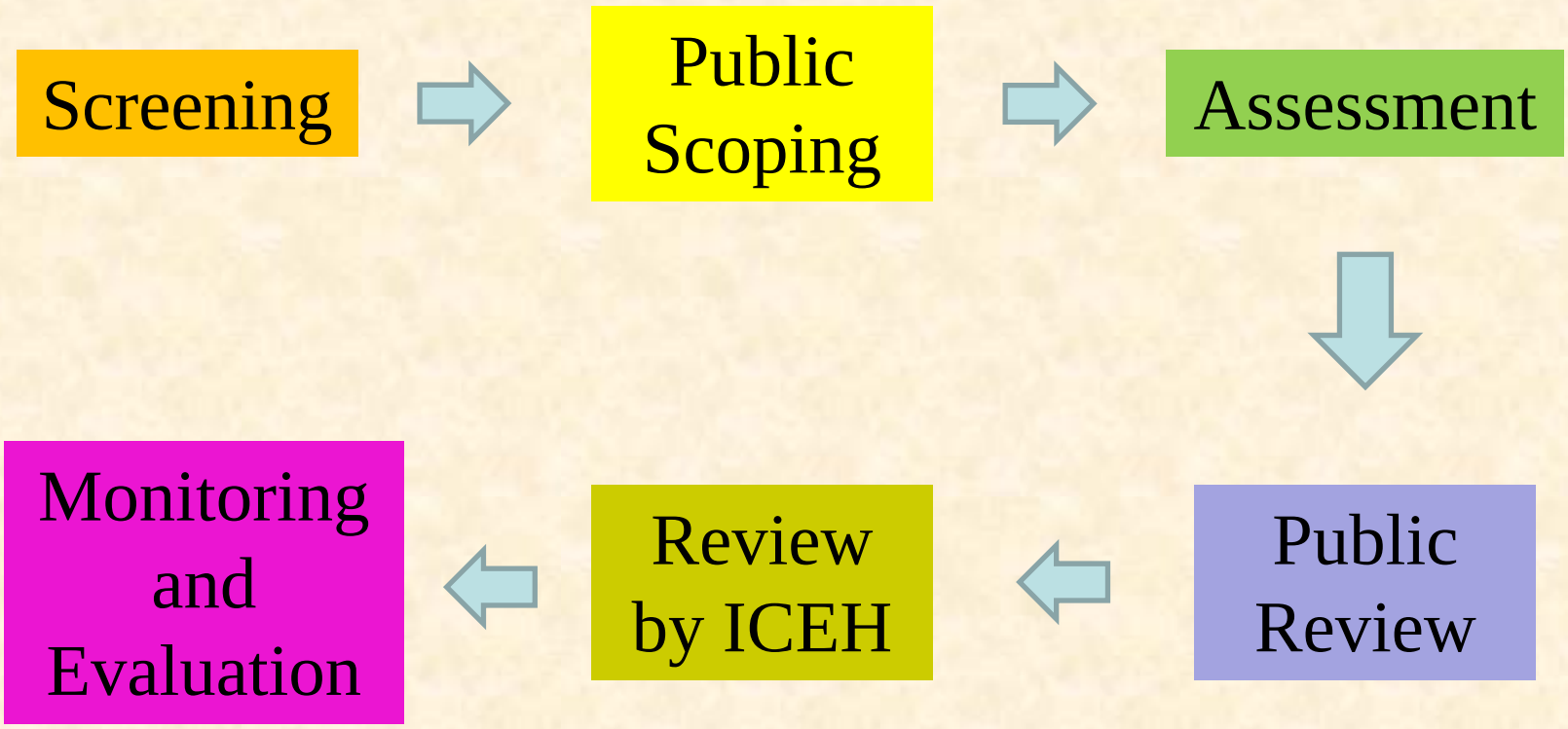
Process of E&HIA under Thai Laws

- There must be a “Public scoping” allowing stakeholders to participate in presenting their concerns and the guidance for assessment.

Process of E&HIA under Thai Laws

- For HIA, it must cover at least the following 9 “health determinants”: effects on natural resources; production, transportation and storage of hazardous substances; occurrence and release of hazards; exposure assessment; occupational impacts; impacts on community relationship; impacts on artistic and cultural heritages; impacts on vulnerable groups; and resources and readiness of health sector.
- Report on the study must be under public review.
- Drafted report must be submitted to the Independent Commission on Environment and Health (ICEH) for final approval.

Diagram of E&HIA Process



Impacts of Minings

- Prior to Environmental Quality Promotion and Conservation Act (1992), minings had caused deterioration of environment and health.
- For example, tin minings in the South have left thousands of cases of **arsenic poisoning**.
- Tin and tantalum minings in Phuket Island caused the damages to fisheries, tourism, soil erosions along the seashores, etc.

Arsenical hyperkeratosis

(http://www.ijdvl.com/viewimage.asp?img=ijdvl_2008_74_6_559_45097_u6.jpg)

Impacts of Minings

- Post-E&HIA laws (after 1992-present), minings have remained harmful to environment and health.
- For example, gold minings in the North have caused **arsenic poisoning** and high blood levels of cyanide and heavy metals, also high levels of heavy metals in the environment.
- Zinc mining in the North has caused cases of **cadmium poisoning**.

A patient with chronic renal failure under peritoneal dialysis.

National Health Commission Office. Mining History Photo Book, 2014.

Impacts of IA: Minings

- Even though required by law to have people participation in the HIA process, still some minings have caused health effects to the community as it has been abused to just a “ritual process”.
- Concerns of community have not been paid attention to.
- The quality of assessments is very poor and not scientific.
- Post-E&HIA monitoring process is not effective.

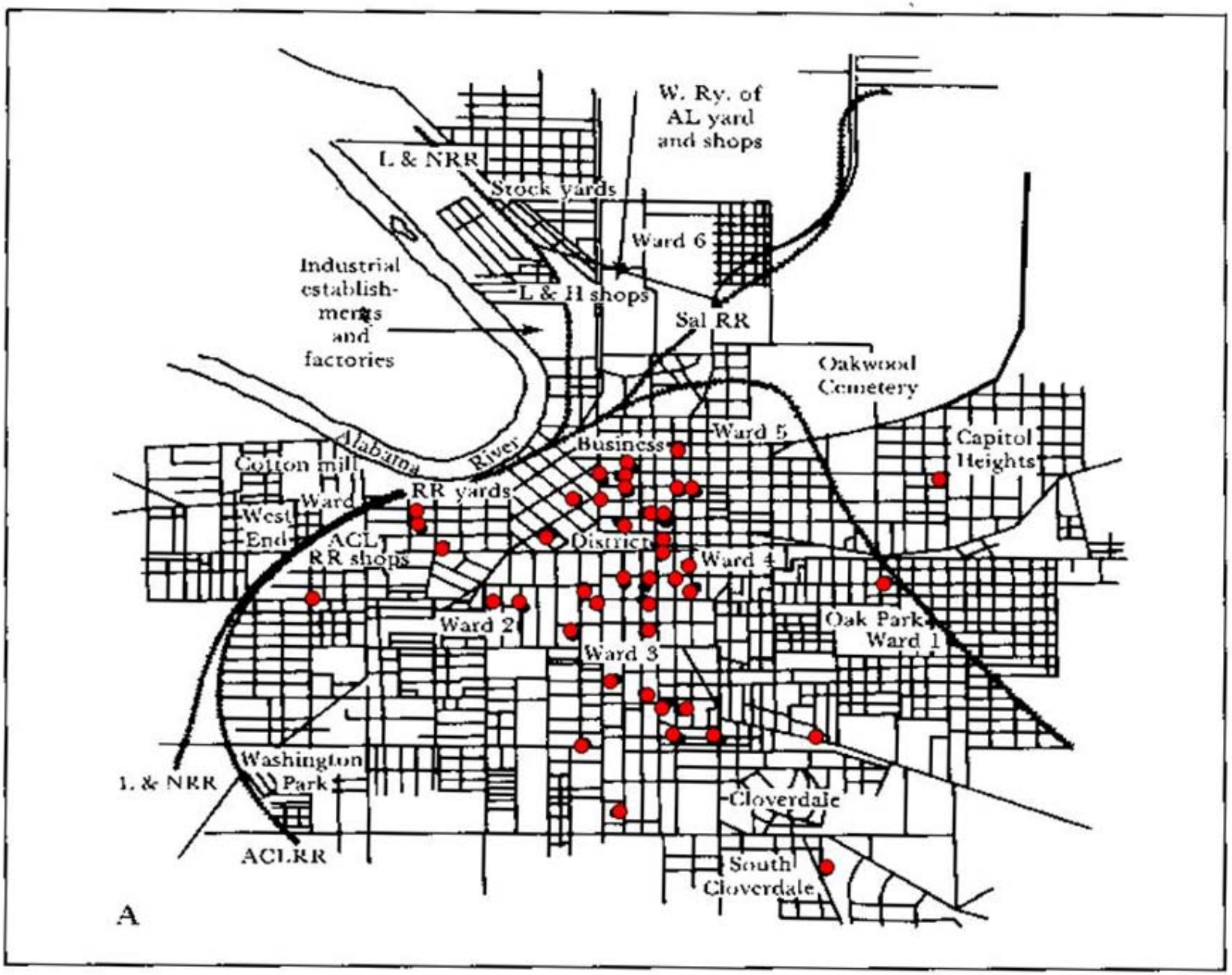
Solutions and Mitigations

- Establish compensation fund to remedy those who are affected by the mining in terms of health service, welfare, etc.
- Community-driven HIA (CHIA) should be enacted to empower community.
- “Popular epidemiology” should be introduced as a monitoring tool.

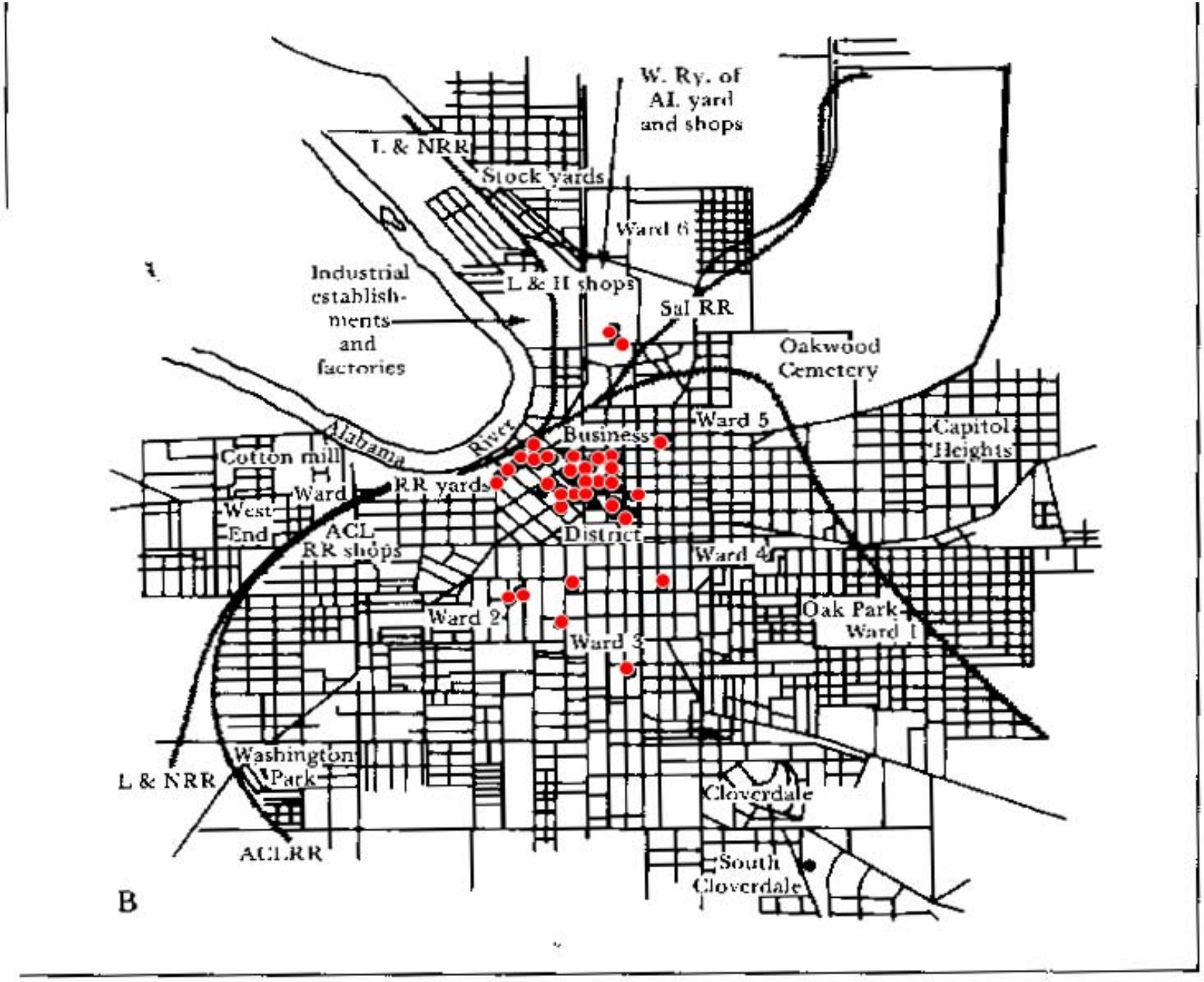
Concept and Principle of Popular Epidemiology

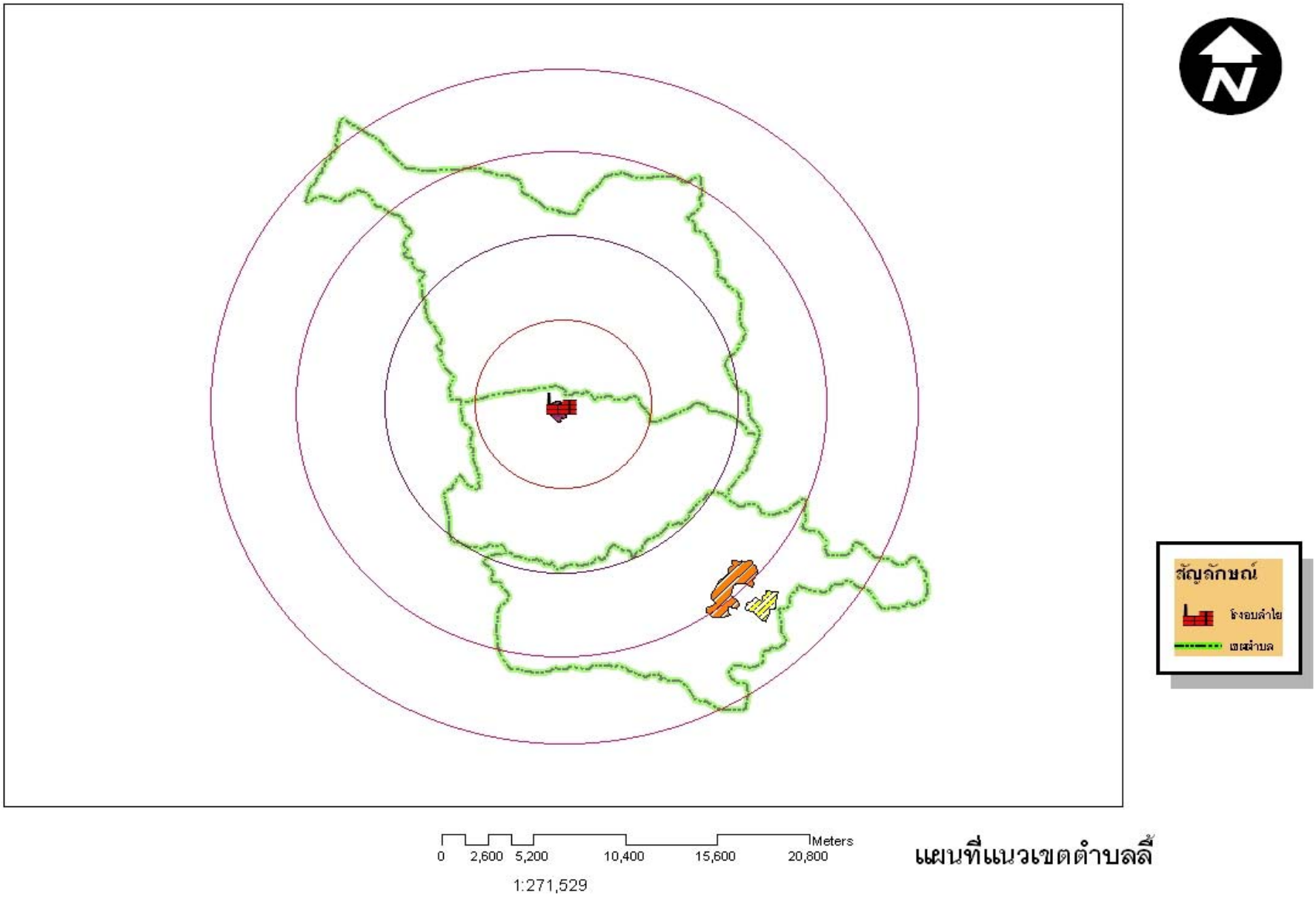
- "**Epidemiology**" is the study of the association between risk factors and a certain health problem.
- "**Popular Epidemiology**" is the modified method that any layperson can do to help find out the linkage, which is neither so complicated nor difficult to interpret.

Distribution of patients according to their residences



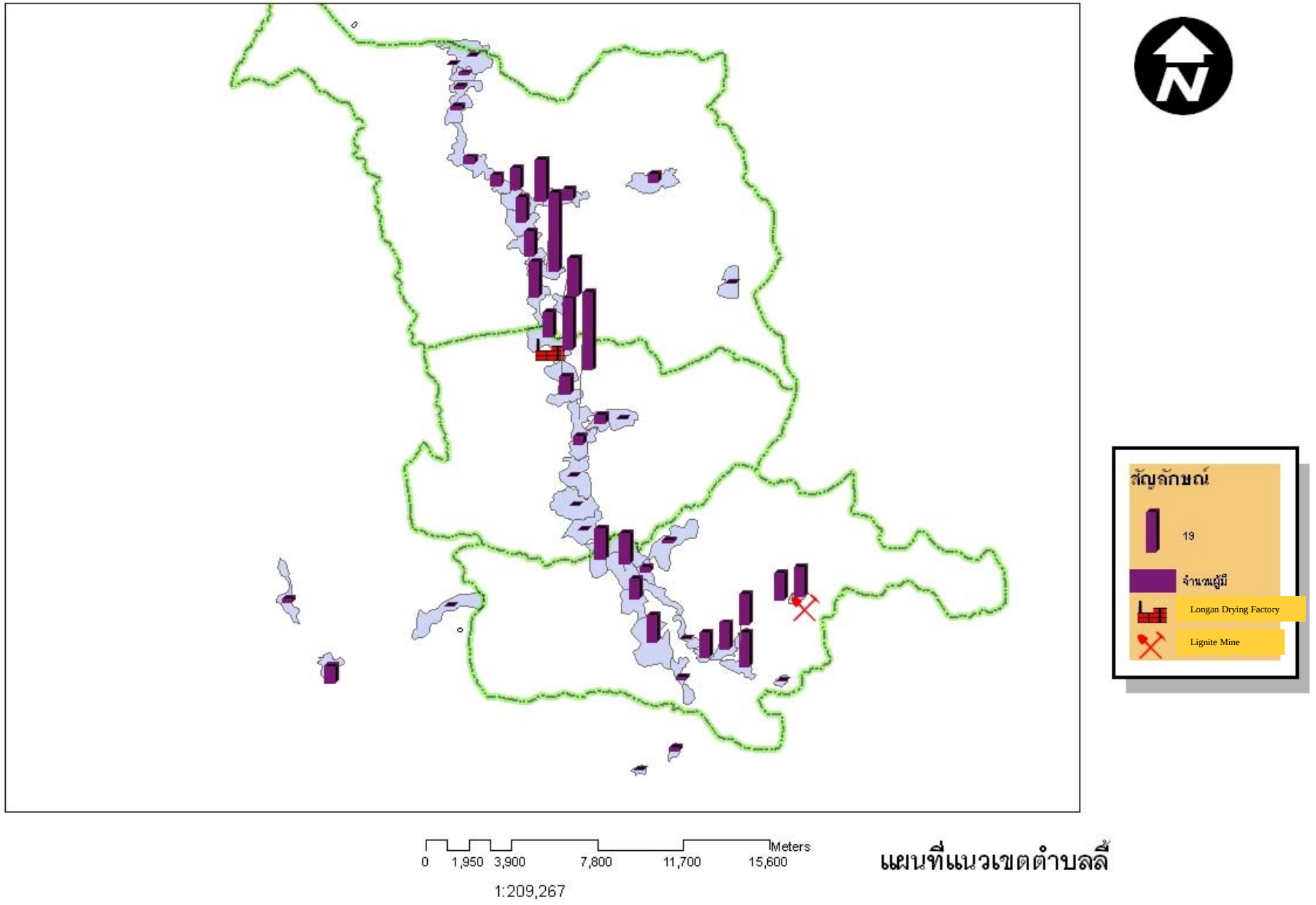
Distribution of patients according to their workplaces



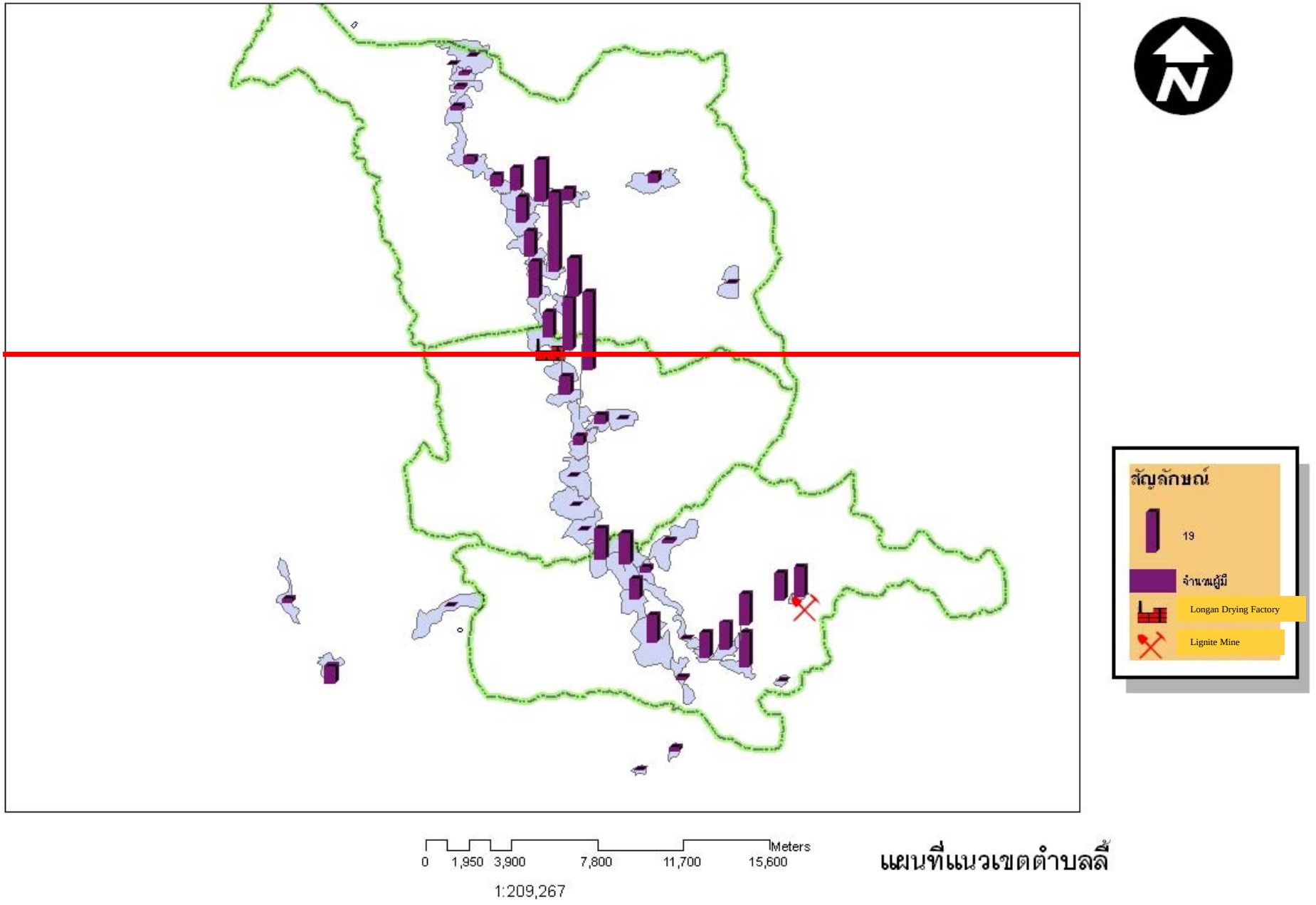


แผนที่แนวเขตตำบลลี้

Distances from factory: 0-5.00, 5.01-10.00, 10.01-15.00, and 15.01-20.00 km, respectively



Frequency of 342 households of patients with respiratory problems



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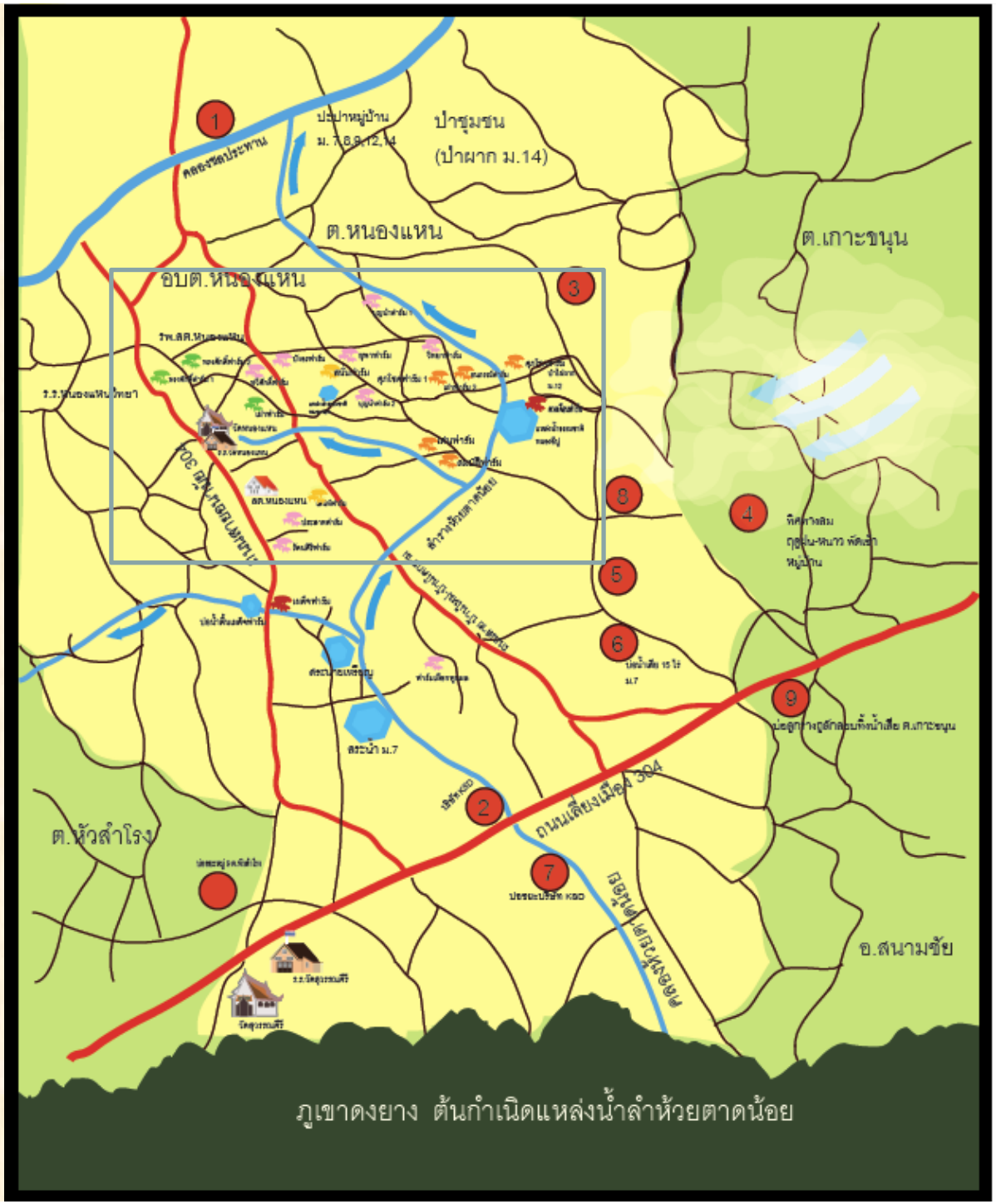

Effects of hazardous waste dumping sites to pig farms.

Natural Pond

Hazardous Waste Dumping Sites

เริ่มเห็นผลกระทบในปี 2551 (เผด็จฟาร์ม) และปี 2552 (ดวงเดือนฟาร์ม) ผลกระทบคือ ลูกหมูแรกคลอดตายยกครอก แม่หมูแท้ง แม่หมูคลอดก่อนกำหนด ลูกหมูแรกคลอดพิการ แม่หมูเบื่ออาหาร น้ำนมแห้ง ลูกหมูผอม โตช้า

เริ่มเห็นผลกระทบในปี 2553 ผลกระทบคือ ลูกหมูแรกคลอดตายกว่าครึ่งครอก แม่หมูแท้ง แม่หมูคลอดก่อนกำหนด แม่หมูเบื่ออาหาร น้ำนมแห้ง ลูกหมูผอม โตช้า (*เผ่าฟาร์ม 2 หมูอายุ 6 สัปดาห์เนื้อเหลือง)

เริ่มในผลกระทบในปี 2554 ผลกระทบคือ ลูกหมุแรกคลอดตายกว่าครึ่งครอก แม่หมูคลอดก่อนกำหนด แม่หมูเบื่ออาหาร น้ำนมแห้ง ลูกหมูผอม โตช้า

ยังไม่มีอาการแสดงที่ผิดปกติ

ฟาร์มหมูที่อยู่ในบริเวณใกล้เคียงกับฟาร์มที่เข้าเก็บข้อมูลผลกระทบ

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Community-Led Mapping Breaks Cycle of Sickness in Thailand

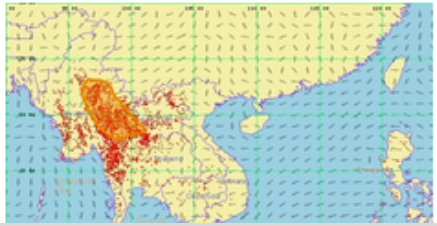
Printable story [pdf]

Villagers in northern Thailand connect environmental causes with sickness using an innovative mapping technique and then take action to protect and promote their own health.

Smoky haze clings to villages in northern Thailand during the dry season between January and April, when the monsoon rain stops and garbage burning begins. People here burn everything that needs disposing, from plastic bags to rice straw left over from harvest. Burning is the cheapest and fastest way to remove trash in the largely rural region without infrastructure and to prepare fields for planting when the rains return. Most people in the region are subsistence rice farmers who have been burning their trash and fields for at least 100 years.

Fire burns a hillside in northern Thailand, creating a plume of irritating smoke, which is common during the dry season from January to April.

A short drive from the burn zone Phongtape Wiwatanadate, M.D., Ph.D., director of Community Medicine at Chiang Mai University, studies the health effects of burning, namely asthma and lung cancer. Thailand's northern province, where burning is rampant, has one of the highest rates of lung cancer in the developing world, with 500 to 600 new cases appearing every year in a population of 1.7 million people, comparable to the incidence of lung cancer in other rapidly developing countries in Southeast Asia, according to the most recent 2008 data from the World Health Organization.[1] Lung disease in northern Thailand has been linked to airborne carcinogens, including the smog-inducing byproducts of burning plastic. Small airborne particulates—such as dust, ash and diesel fuel particles—are inhalable, and therefore, the most dangerous.



Going beyond the data

Early in his air quality research, Phongtape called public meetings in the area where he had worked as physician for many years. Local people—including a few Buddhist monks clad in saffron-colored robes and young people wearing jeans and sandals—gathered in community centers to hear Phongtape's message: Smoke from