

Health and safety GIS applications: an example in INAIL.

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INAIL

Italian Workers' Compensation Authority

CONTARP

*Technical Advisory Department for Risk
Assessment and Prevention*

INAIL - The Italian Workers Compensation Authority - pursues several objectives: the reduction of accidents at work, the insurance of workers involved in risky activities; the re-integration in the labour market and in social life of work accident victims.

This type of insurance, compulsory for all employers hiring workers in activities which the law defines as risky, protects workers from any kind of damage resulting from work related accidents and occupational diseases freeing employers from any civil liability.

The safeguard of workers is now more than ever an integrated protection system-as a result also of recent innovative provisions of law-ranging from prevention on the workplace to health and economic benefits, medical treatment, rehabilitation and reintegration in the social and working life of victims of physical damage consequent to a work related accident or professional disease.

With a view to contributing to the reduction of accidents, INAIL has also implemented a number of important tools to continually monitor employment and accident trends, it provides small and medium size enterprises with training and advice in the field of prevention and funds companies that decide to invest in the improvement of safety.

INAIL acquires and uses billions of data managed through a complex system of relational database.

It's structured in different sections containing information both on Italian labour's market (industries, workers, etc.) and on accidents and diseases occurred.

Data are commonly used to identify risky activities and to promote preventional policy.

Although INAIL Statistical Observatory provides information - on a monthly basis and at a national level - on fatalities, annuities, work related accidents and diseases, traditionally they aren't managed on a geographic base.

Since some years INAIL Technical Advisory Department for Risk Assessment and Prevention (CONTARP) is testing the possibility to use a GIS to manage these information.

In particular, an important application has been developed to collect data referred to activities whose workers are exposed to respirable crystalline silica (RCS). Silica can provoke silicosis that is a disabling, nonreversible and sometimes fatal lung disease.

More than 200.000 Italian workers are exposed to crystalline silica (CAREX estimate based on 1990-1993 period).

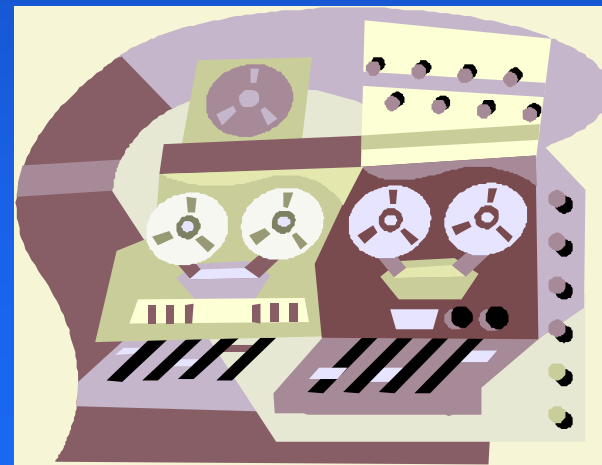
There is no cure for the disease, but it is 100 percent preventable if employers, workers, and health professionals work together to reduce exposures.

For this reason silica risky activities must pay an additional premium in order to support the annuities due to these professional diseases and for the development of dust prevention actions at workplaces.

MAIN RESULTS

The Geographic Information System developed contains both administrative and technical data of companies subject to this additional premium.

It has been used ArcGIS 9.1[®] in relation to MSAccess 2003[®] database.

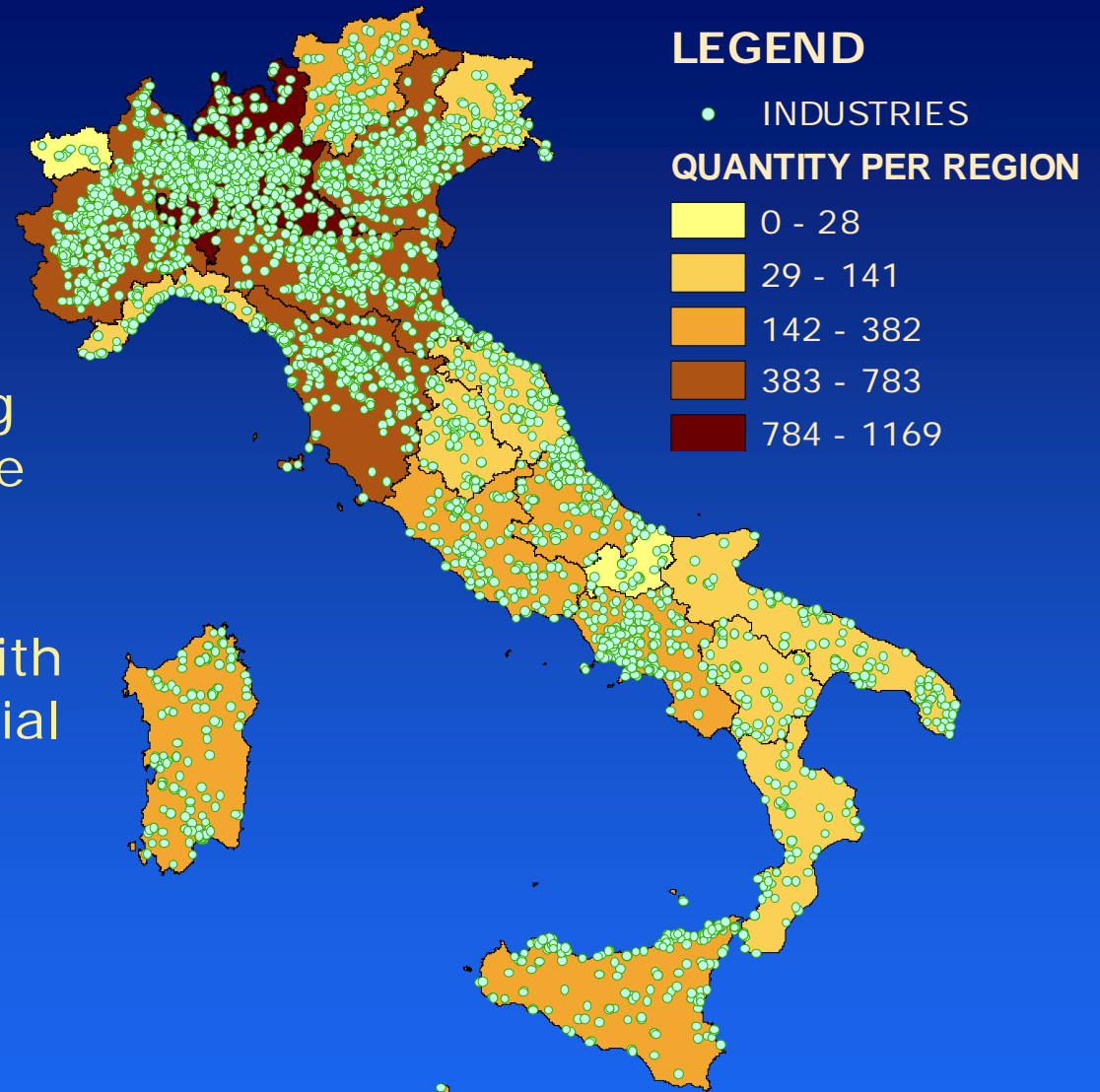


Nowadays, for the silicosis, this additional premium regards some thousands of italian companies, a much reduced number if compared to the hundreds of thousands of the past decades.

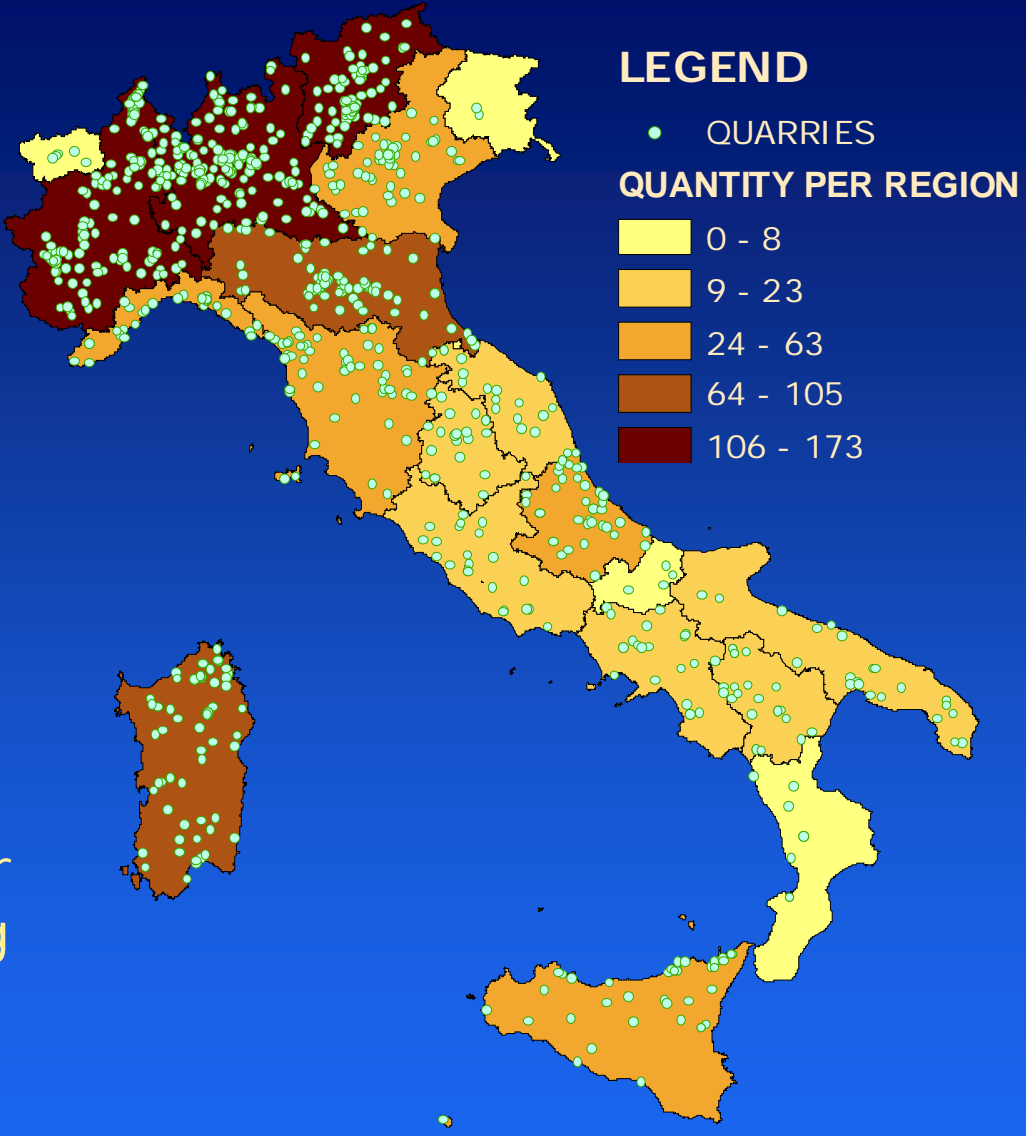
In particular, on a total number of about six thousand industries the most representative activities turn out to be:

- Marbles Laboratories (24%);
- Quarries (13%);
- Pottery Industries (9%);
- Cement Industries (7%).

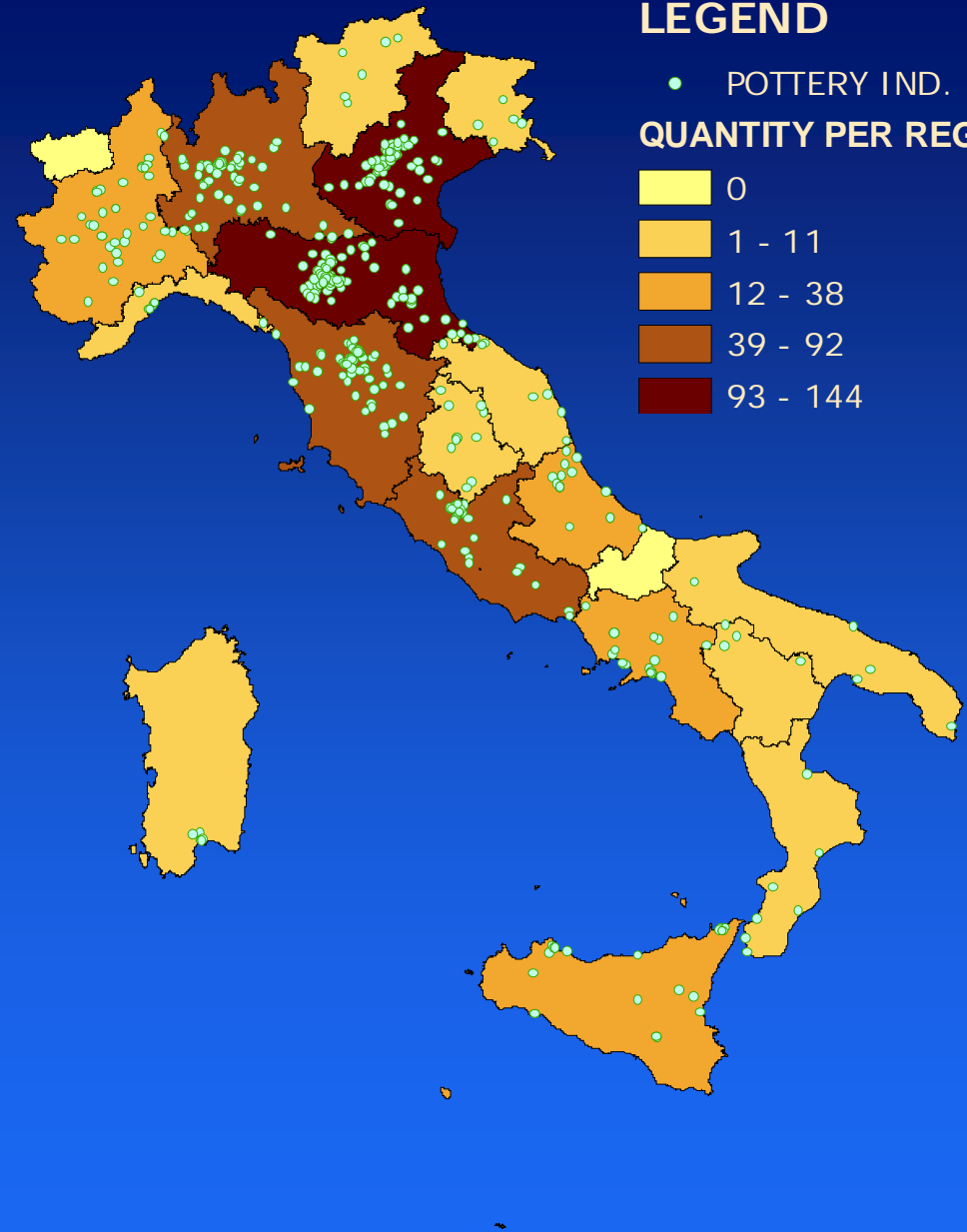
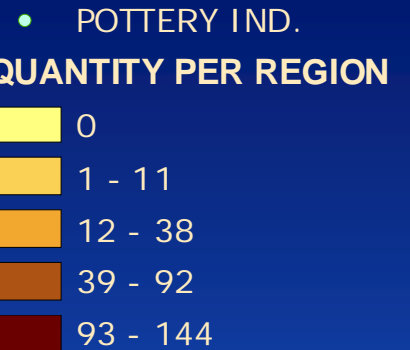
Globally, industries paying the additional premium are distributed with some preference in the north regions. This is coherent with the more developed industrial economy present in that portion of the country.



Focusing attention on quarries sites it's possible to recognize a correlation with Italian geological conformation. In fact, regions with higher density are those including Alpine Arc.



LEGEND



On the contrary, pottery industries distribution shows a tendency to concentrate in bound and determined area. Reason can be found in the historic presence of pottery crafts schools.

GIS application permits to query coverage in order to obtain all administrative and technical information on a single industry.

As in the example, one of the most important data, for INAIL purposes, can be the work force per year (*exposed workers in the table*) involved in the possible risk.



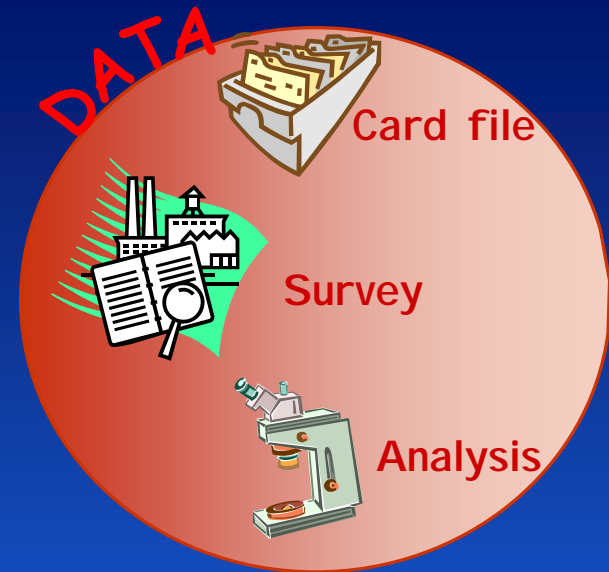
Identify Results

Layers: <Top-most layer>

EXPOSED WORKERS PER POINT

Location: [655790,573740 4940946,373616]

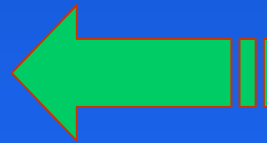
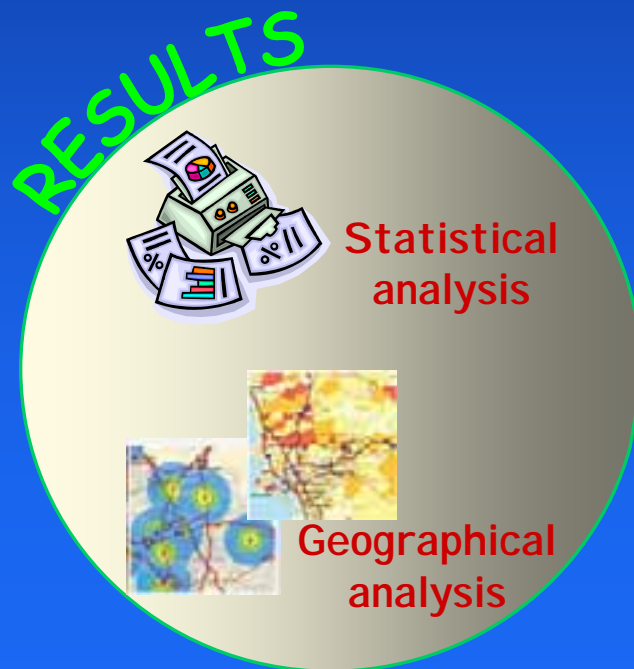
Field	Value
INDUSTRIES PER POINT	1
REGION	EMR
PROVINCE	MO
TOWN	MODENA
ZIP CODE	41100
TARIFF CODE	7151-7250
WORKERS (TOTAL)	85,5
EXPOSED WORKERS	19,8
PERCENT EXPOSED WORKERS	23
EXPOSED WORKERS PER POINT	19,8



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A group of GIS men



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ESRI ARCGis