

IMPACT OF HIGHWAY (SECTION: CHISLAZ-SUPLACU DE BARCĂU) WORKS BUILT ON THE ENVIRONMENTAL FACTORS

Mintas Ioan*, Mintăș Olimpia *

*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea;
Romania, e-mail: buzasiu@yahoo.com

*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea;
Romania, e-mail: ciac@ciac.ro

Abstract

The paper's aim is to present the impact achieved upon the environment by the construction workings of the highway Oradea-Bucuresti. The estimation of the potential impact has been achieved by taking into consideration both the average number of physical units (motor vehicles, auto-transporters, trucks etc.) that cross the road/day, area and the rolling ways currently employed and placed in similar topo-climatic characteristics.

Key words: highway, environmental factors, pollutions

INTRODUCTION

The desire for progress and economic growth at any cost, the man looked, often it is also part of the natural system, interfering, sometimes exceeding its carrying capacity. Thus, imbalances appeared whose effects are already felt, global concern is increasing in the direction of counteracting these effects. (Jelev I., 2000)

This Project will be an economic engine for Romania's development, not only in the construction phase but also for years into the future. Upon completion, it will form an important section of the Romanian national highway system, providing a vital connection with the rest of Europe. The construction of the motorway is particularly important for Romania's integration into the European economy, and will link the markets of Europe and Central Asia through the Black Sea port of Constanta. Both during its construction and on its completion planned for 2013, the motorway will bring important economic benefits to Romania thanks to the joining to the European Union on January, 1st 2007.

Location of highway will be the Barcău intramuros Basin, with a height ranging from 154 to 168 m above sea level. The landscape is characterized by a slight slope to the east, where valleys torrents, tributaries of the basin area drained by Barcău meanders quite deep.

At this point in Section 3C, earth-moving activities are ongoing in small areas between miles 10 and 42. Continue work to remove topsoil, mass excavation, backfilling, preparation and maintenance of storage areas for materials failure, construction of access roads and installation of environmental protection measures.

Structural activities continue with the installation of pilots, breaking the heads of piles, foundation works, retaining walls, elevation pillar, the end of the pier. Also continue preparation of steel and concrete. 13 beams were manufactured U.

Section 3C career activities continued to produce ballast foundation, CSB and asphalt aggregates. Perform installation work station to Sălard asphalt, providing protection against environmental factors, especially environmental factor air. (Nicoară L., 1975)

Also continue work on the viaduct at Suplacu Barcău largest structure along the Transylvania Motorway, which will, once completed, be the highest viaduct in South-East. Viaduct is a traditional structure on piles, with a length of 1.8 kilometers and 45 openings of 40 m.

The air pollution caused by motor vehicles raises two main features: first of all, the gas evacuation is being done in the proximity of the ground, which leads to large concentrations (of polluting agents) at lower altitudes, even in the case of the gases with low density and a great capacity of diffusing in the atmosphere. Secondly, the gas emissions are being produced on the entire area of the locality, the differences among concentrations depending upon the traffic level and the road (street) ventilation characteristics. Among the substances that lead to air pollution, composed by a large number of compounds (several hundreds), the top place is occupied by the escapement gases. (Lesnic M.,2000) The volume, the nature and the concentration of the polluting agents disseminated in the atmosphere depend on different variables as: the motor vehicle type, the nature of the fuel and the technical characteristics of the working engine. Among these polluting agents we should mention the suspension particles, brimstone dioxide, the lead, the poliflavoured hydrocarbons, the volatile organic compounds (benzene), the asbestos, the methane gas and so on.

MATERIAL AND METHODS

On Section 3C-Section Suplacu de Barcău, the Contractor has recommenced some structural works including 1,210 m³ of structural concrete placed, 723 lm of piles installed, production of 666 m³ of ballast base, 74,573 m³ of excavation and 145,984 m³ of fill. Contractor has also commenced the installation of U Beams at Suplacu de Barcău with 40 installed this period and 21 produced. 5 T Beams have been installed during this period.

The final total surface occupied by the proposed roundabout way it will be of 16.2 ha. The surfaces which are going to be occupied are agricultural fields and communal woods, found in their outmost majority in private property. During the workings, a surface of about 12 ha will also be temporarily affected (occupied).

The working is placed in type F seismic area with a $K_s = 0.08$ seismic value and with a $T_c = 0.7$ sec colt time.

Impact Assessment of environmental factors was made based on parameters considered in the design of the topography of the affected areas and a comparison with similar works built in approximately similar relief(Barnea M.,Ursu P.,1974), (Borota D., 2000).

RESULTS AND DISCUSSION

The pollution type, the pollution source, the legal maximum level of pollution and the measured pollution produced by the activity are comprised in tabel 1

Table 1

The pollution type	The pollution source	No. pollution sources	The legal maximum level of pollution(the upper limit admitted for human beings and environment) According to the Ordinance 463/93, NTPA,Ord.708/24)	The measured pollution produced by the activity and reducing and suppressing counter-measures
Smell	The carburant combustion process	10000	Non-mentioned	Impossible to quantify
Noise	The vehicles motion	10000	55dB on daylight	The maximum noise level due to the auto traffic – 85dB;
Atmospheric	The carburant combustion process	10000	-CO 80mg/mc -SO ₂ 850mg/mc -NO _x 180-50mg/mc -Total powders (dust) 20mg/mc VOC 50mg/mc Pb (David V., 1997) (Mintas O.,2008)	0.12 mg/mc 0.0001 mg/mc 0.0004 mg/mc 0.02 mg/mc 0.000001mg/mc
Surface, ground and soil waters	Accidentally fuel losses	Impossible to quantify	In surface waters 5mg/l In ground water 5mg/l In soil < 100ppm	Impossible to quantify

In the case of the concentration calculus for the atmosphere polluting agents' level the 16.2 ha field surface(occupied by the road) was taken into consideration, a 1.2 m high mixture altitude and the Corinaire values for the emission factors (agents) (Borota D.,Buzasiu O.,2000).

CONCLUSIONS

The susceptible substances for atmosphere infection, as a consequence of constructing highway are the combustion gases, provided both by the engines of the tools and equipments that will be employed for developing the workings proposed and by the auto means (vehicles) that will be used for materials transportation.

The functioning period of the proposed variant will be marked by an increasing level of the combustion' gases concentration (CO₂, CO, NO_x, SO_x, COV) and of the powders and sedimentation particles. In order to secure a clean atmosphere in the close neighbourhood area of the proposed road, a stratified vegetal belt on both sides, in its safety area and parallel with the road' axis, was planned.

One can estimate that the impact of the highway upon the population is minimal or even null, due to the placement of the entire route in the outside area (extravilan) of the locality. This is a BAT recommendation.

The study did not identify the location of protected targets (sensitive) located at a distance less than 1000-1500 m, or areas of interest for nature conservation (species or habitats protected).

In terms of biodiversity, the area we refer to, is typical diversified development and organization of specific agroecosystems submontane zone. Species include a wide range, from cereals, technical and sunflower plants.

Agricultural areas that have a seasonal alternation coexist with areas covered with spontaneous vegetation specific mezoxerofile lawns. Shrubs of *Rosa* sp., *Prunus* sp., *Rubus* sp. And *Crateaeegus* sp., The floor arbustiform make trecarea to special interest as *Fagus silvatica* forest and deciduous species specific hilly areas, alternating with patches of pine mingled well, which become dominant in the highlands.

Natural grassland (izlazuri) suprafeșe include large, to the detriment of areas under cultivation, animal husbandry is developing mainly in household system, typically stabulației free.

Also recommend the development of protective panels are placed to ensure limit of road siguranței populației, hunting and movement.

Operational Program Sector - Transport under which funding and investment described meet the EU objective "Convergence" and includes five axes of priorities, one of which is "sustainable development of transport sector. We therefore hope that under the auspices investment: Transilvania Motorway will not only generate positive effects related to traffic, but will rise and reduce the impact of road transport on the environmental factors at the national level, thus achieving another tel imposed by the National Environmental Strategy.

REFERENCES

1. Barnea M., Ursu P., 1974, Pollution and protection de l'atmosphere ,Ed. Tehnica,Bucuresi,19-23
2. Borota D., Buzasiu O., 2000, Tehnologii de protectie a aerului, Ed. Universitatii din Oradea, 68-71
3. Borota D., 2000, Poluarea aerului, Editura Universității din Oradea, 65-87
4. David V., 1997, Controlul analitic al poluanților atmosferici, Editura Universității din București, 45-56
5. Jeleu I., 2000, Managementul mediului, Editura Universității din Oradea, 23-42
6. Lesnic M., 2000, Poluarea atmosferică, Universitatea Tehnică București, 67-74
7. Mintas O., 2008, Meteorologie ,climatologie, Ed. Agora, Oradea, 79-83
8. Nicoară L., 1975, Curs de drumuri, Editura Institutul Politehnic Traian Vuia, Timișoara;
9. Strategia Nationala de Mediu
10. Strategia de dezvoltare a Romaniei