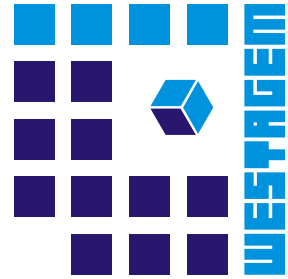


WESTAGEM SRL



*Report on the air quality impact generated by
the Rosia Montana Project proposed by
S.C. Rosia Montana Gold Corporation S.A.*

Client:

S.C. Rosia Montana Gold Corporation S.A.

S.C. WESTAGEM S.R.L.

Authors

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Client:	<i>S.C. Rosia Montana Gold Corporation S.A.</i>
Contract:	<i>0227 / 05.10.2010</i>

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4.2.3 Air quality prognosis - exclusive impact of the Project

This section discusses the method and results of the air quality impact assessment, taking into consideration exclusively the effect of pollutant emissions generated by the Project related sources.

4.2.4 Estimation and modelling methodology

As shown in Section 4.2.2.2 the activities and operations generating fugitive emissions associated with evacuation stacks or ducted sources were inventoried. The air dispersion modelling was developed to estimate the concentrations of NO₂, CO, SO₂, TSP, particles with size less than 10 microns (PM₁₀), Pb, As, hexavalent chromium[Cr (VI)], Ni, Cd, PAH and benz(a)pyrene, outside the site. A distinct air dispersion modelling study was prepared for the assessment of the potential impact generated by cyanide volatilization as HCN in the CIL tanks and decant tank area, as well as in the TMF area.

The air impact generated by pollutant emissions associated with the Project activities was assessed using mathematical modeling of concentration ranges for various averaging intervals. The averaging intervals taken into account were those associated with the limit values, threshold values and target values representing criteria for air quality assessment. The impact on the sensitive receptors in the Project area vicinity was assessed in accordance with the limit and threshold values and target values provided by the national legislation (Law 655/2001, M.O. 592/2002, M.O. 756/1997, M.O. 448/2007). The methodology applied is summarized below. According to the distribution of inhabited areas upon the Project start-up, the receptors (individual households) closest to the Project site were selected where the maximum impact generated by the Project is expected to occur.

Model selection and input parameters

Air dispersion modelling was conducted using the best available techniques in order to simulate the off-site transport of pollutants generated by the mining activities. During the last years, the air modelling methods for the assessment as per the criteria requested by the legal regulations underwent important changes, as follows: 1) air dispersion is based on the structure and scale of turbulences within the planetary boundary layer; 2) taking into consideration and refining of surface and height sources; 3) incorporation of simple and complex land simulation algorithms.

AERMOD is a steady-state plume model. In the stable boundary layer, the concentration distribution is considered Gaussian in both horizontal and vertical plane. Within the convective boundary layer the horizontal distribution is considered Gaussian while the vertical distribution is described with a bi-Gaussian probability density function. This behaviour of the concentration distribution within the convective boundary layer was demonstrated by Willis & Deardorff (1981) and Briggs (1993). Moreover, within the convective boundary layer, AERMOD also takes into consideration the so-called “ascension plume” whereby part of a plume mass generated by a source raises and stays near the upper part of the boundary layer before mixing within the convective boundary layer. AERMOD also considers any plume penetrating the high stable layer, further allowing the plume to re-enter the boundary layer when and if the case.

AERMOD incorporates through a new and simple approach the current concepts regarding the flow and dispersion in complex terrains. If necessary, the plume is modelled either with a trajectory that has an impact with the site, or a trajectory that follows the site topography. This approach was considered as realistic from a physical point of view, easy to implement avoiding the necessity to make a distinction between simple, medium and complex topographies as required by the legal regulations in force. Therefore, AERMOD eliminates the necessity to define complex topography regimes; all types of sites are treated consistently, continuously and simply, at the same time maintaining the flow profile division concept (Snyder, et al., 1985) under stable stratification conditions.

The American Meteorological Society – AMS and United States Environmental Protection Agency – US EPA developed the regulatory Model AMS/EPA (AERMOD) which incorporates these changes. This model was selected for the assessment of the impact generated by mining operations as a result of: 1) efficient use of local meteorological data collected every hour; 2) capacity to calculate short and long-term concentrations from multiple sources of various types; 3) capacity to incorporate topographic localized data in view of estimating the impact on complex sites; 4) public availability of this system, already validated through numerous experimental programs. The AERMOD modelling system includes three components: AERMET, 99211 version (AERMOD meteorological pre-processor), AERMAP, 99211 version (AERMOD topographic pre-processor) and AERMOD, 99351 version (for dispersion modelling).

The hourly meteorological data for a representative calendar year was provided by the National Meteorology Administration. The data refers to the Rosia Montana meteorological station (located

approximately 1 km N-N-E of the Rosia Montana locality). These hourly meteorological measurements were used with the AERMET software to generate appropriate input data for the dispersion model (both parameters of high atmospheric layer and surface parameters). The meteorological set of processed data was analyzed in terms of accuracy.

In order to estimate the impact generated by the Project activities a network of receptors was selected consisting of 2115 discrete points located in the nodes of a 250 by 250m grid, starting at approximately 4400 m south-west of Abrud and going further to a point located approximately 3000 m north of Birdesti. The AERMAP software was used to estimate the critical topographical levels for each receptor, using the geodesic grid data supplied by SNC Lavalin. The critical topographic levels, in combination with the meteorological parameters recorded every hour are used by AERMOD to determine how the pollutant plume concentrations will be treated in case of high terrain.

AERMOD may forecast the pollutant concentrations from multiple sources for a large variety of sites, meteorological conditions, types of pollutants and averaging periods. For this project, the short-term concentrations were calculated using the maximum hourly emission rates for simultaneous activities and averages calculated for 1 hour, 8 hour and 24 hour intervals. The annual concentrations were modelled using all the active sources in the respective year.

The maximum impact occurred outside the Project area was evaluated by relating to the limit values established for each pollutant and for each averaging interval. The impact was also analyzed for all the 15 sensitive receptor communities located around the Project site: Rosia Montana (protected area), Abrud, Bisericani, Bucium Sat, Coasta Hentii, Dogaresti, Floresti, Garda Barbulesti, Gura Rosiei, Helesti, Iacobesti, Ignatesti, Petreni, and Vartop.

Selection of scenario

In view of assessing the maximum impact generated by the general mining operations, this was analyzed separately for the construction, operation and closure phases. Given the nature of the mining operation, most sources are transitional, being thus difficult to choose one single time period corresponding to the most unfavourable conditions. Therefore, for the worst case scenario six representative years were selected from the life of the mine project.

Construction phase scenario

For the construction phase, year 0 (pre-operation) was considered for the worst case scenario. During this year, it is expected to have all the roads, process plant, TMF dam and platforms for the future topsoil/overburden, waste rock, low-grade ore stockpiles already constructed. Limited mining activities will be conducted in the Carnic open pit towards the end of the year. Even though many of the described activities will be carried out over a limited period of the year, the long-term impact is assessed by taking into consideration all emission sources.

The short-term impact (from one hour to 24 hours) was assessed based on a selection of sources simultaneously active. As the first activity will be the construction of roads, followed by construction of other operational areas, there will not be a simultaneous effect of the sources from these two major activities. However, it is difficult to determine which of the two types of activities - road construction or construction of other site facilities - will generate the highest impact through the associated emissions. This, for the purposes of the analyses two different short term impact models were selected. The first scenario involves the road construction with no other activity on the process plant site; hence it is considered that the completion of the road construction was necessary to ensure transport to the site. The second scenario involves the construction of the following site facilities: process plant, TMF, platforms for the future topsoil, waste rock and ore stockpiles and Carnic open pit mining.

Not all activities will take place simultaneously on a certain day or at a certain hour. Based on the mining activity schedule, it is considered that the worst case scenario involves the following simultaneous activities:

- Overburden stripping along the route of 1 year 2 main roads and secondary roads 1, 4, 8 and 14;
- Topsoil stripping along the secondary roads 3 and 9;
- Construction of roadbed for the secondary roads 8A, 9 and 13.

All other road construction activities are considered to be conducted during other periods of the year. For each of the above operations the maximum hourly emissions were considered.

Similarly, the worst case scenario corresponding to the construction of the other facilities and mining operation and generating potential simultaneous impacts includes the following:

- Overburden stripping on the process plant and TMF dam sites;

-
- Mining activities in the Carnic pit (drilling, truck loading and storage);
 - Unloading operations at the low grade ore deposit;
 - Unloading operations at the Carnic waste rock dump.

It is expected that the combination of all these operations will generate the worst case emission potential. No other simultaneous operations are foreseen.

Operation phase scenario

Four years were selected for the operation phase (year 9, 10, 12 and 14) as representing the worst case scenario for the mining of the four pits (Cetate, Carnic, Orlea and Jig). For each of the four scenarios a peak mining throughput is expected. However, the throughput will be different for each pit, both in terms of quantity and also site, depending on the year under consideration. Therefore, the most realistic situation will be to consider that regardless of the year under review only two pits will be simultaneously in operation. This is justified by the limited number of equipment and requirement to avoid overstressing the process plant.

Year 9 corresponds to the mining in all four open pits with a high throughput rate in the Jig pit and a sustained activity in the northern part of Carnic (close to the protected zone). Year 10 is more common, corresponding to the simultaneous operation of all three open pits. Year 12 corresponds to the maximum mining throughput rate with simultaneous operation of Cetate and Orlea. This year also includes environmental rehabilitation works at the Cetate pit. Finally, the scenario provides for year 14 a high throughput rate at Cetate without any activity at the other pits.

Even though the scenarios provided for the four modelling years involve activities conducted 24 hours a day, 365 days a year, the short term and annual average impacts were modelled using the hourly emissions and maximum average emissions because the annual average emissions take into consideration the machinery loading factors and would not be recommended for the short-term impact modelling.

Closure phase scenario

Year 19 of the Mine Development Plan was selected as representing the worst case scenario in terms of emissions generated by closure activities. The following will be conducted during this year: process plant demolishing and environmental rehabilitation of the plant site, environmental rehabilitation of the TMF dam area and tailings deposition areas. The topsoil deposit will be used during this period for the environmental rehabilitation of the TMF area.

Similar to the construction phase approach, the annual impact was assessed using all emissions generated by the processes and machinery active in the respective year, even though these operations will not be simultaneous. However, the short-term impact analyses were conducted based on the maximum hourly emission rates from activities which can take place simultaneously.

With respect to particulates, for both TSP and PM₁₀, the worst case scenario occurs during the installation of the soil layer on the downstream slope of the TMF dam, environmental remediation of the process plant site and topsoil transfer from the TMF deposit. For the analysis of all other pollutants, the worst case scenario of emissions is associated with the installation of the soil layer over the TMF basin, demolishing of buildings and process plant structures and topsoil transfer from the TMF deposit.

Emission source

Given the nature of the mining operation, most of the emissions are short-term. The influences of the mobile plant associated with these emissions tend to accelerate the mixing of pollutants near the ground allowing for a higher dispersion of emissions. Due to the occurrence of this mechanism in the emission area, the volume sources located close to the ground ensure an initial dispersion of pollutants. Therefore, the areas where emissions are influenced by mobile equipment were modelled as volume sources. The horizontal and vertical dimensions are based on the extent and height of each source. In all cases, for the vertical mixing a height of 10 m was considered. In addition, the sources associated with the roads were modelled using a series of smaller volume sources (representing the road width) which follow the route of these roads. Due to the road sizes and distance from the concession boundary, the volume sources were separated at 250m intervals. The ducted sources were modelled as point sources.

The input parameters for point source modelling included: evacuation height, evacuation temperature and velocity of pollutant, inner stack diameters, source position and elevation at the bottom of the source. Inputs for volume source model included the source position, elevation at the bottom of the source, evacuation heights, initial horizontal dimensions and initial vertical dimensions.

The number of individual sources varied within each scenario analysis due to the variation of the type of activities carried out within a certain period. The number of sources used to represent the emission characteristics of each scenario varied between 60 for closure activities and 415 for construction activities (long term averaging).

4.2.5 Assessment and interpretation of results

The general results of the dispersion modelling of pollutants generated by the Project activities in the construction, operation and closure phases indicate that in general the concentration levels resulting from the Project emission sources will be reduced and below the limit values provided for populated areas. The impact generated during the construction will be in general higher than the impact generated during operations or closure. The maximum concentrations foreseen for pollutants outside the concession boundary are also below the corresponding limit values with the exception of the 30 minutes average concentrations of TSP which exceed the alert threshold during construction and operation, but are below the limit value. The maximum average concentrations for significant pollutants (NO₂, SO₂, TSP, PM₁₀, CO, Pb (during operation), As (during operation), Cd, Ni, PAH and benz(a)pyrene are compared with the limit values and alert threshold values (in case of NO₂, SO₂, TSP, PM₁₀, CO and Pb), with target values, respectively (in case of As, Cd, Ni, PAH and benz(a)pyrene) provided by the legal regulations, for short-term and long-term averaging intervals. The results are summarized in the following sections.

Construction Phase

The modelling results for the construction phase indicate that the long-term impact is relatively low. Also, the estimated values are below the limit values for each of the relevant pollutants. **Table 4.2.73** includes a summary of the maximum annual average concentrations outside the Project area, for each modelled pollutant. As shown in the Table, the highest foreseen annual average concentrations amount to less than 16% of the limit values for all pollutants. The maximum average impact in the sensitive receptor areas is foreseen to be less than 5% for all pollutants and integration intervals. It is not expected that the annual average concentration levels generated by the construction activities should generate a significant impact outside the Project area.

Table 4.2.73 Maximum concentrations and limit values - all construction activities (annual average)

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit value (VL) /Target value	Measurement Unit	Receptor corresp. to the limit value	Comments
NO ₂	1 year	6.213	-	40	µg/m ³	Population	Below limit value
SO ₂	1 year	0.025	-	20	µg/m ³	Ecosystems	Below limit value
TSP	1 year	4.938	52.5	75	µg/m ³	Population	Below alert threshold and limit value
PM ₁₀	1 year	2.336	-	40	µg/m ³	Population	Below limit value
Cd	1 year	0.001	-	5	ng/m ³	Population	Sub valoarea limita
Ni	1 year	0.007	-	20	ng/m ³	Population	Below limit value
PAH, of which:	1 year	1.740	-	-	ng/m ³	-	-
Bnz(a)pyrene	1 year	0.0174	-	1	ng/m ³	Population	Below limit value

Comparing the two worst case scenarios for the short-term impact, the maximum concentrations of SO₂ and CO outside the Project area were foreseen during the road construction phase. For the other sites maximum concentrations of TSP, PM₁₀ and NO₂ were foreseen. **Table 4.2.74** summarizes the maximum short-term impact associated with the two scenarios.

Table 4.2.74 Maximum concentrations and limit values - all construction activities (short term averages)

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV)	Measurement Unit	Receptor corresp. to the limit value	Comments
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Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV)	Measurement Unit	Receptor corresp. to the limit value	Comments
NO ₂	1 hour	161.79	400	200	µg/m ³	Population	Below alert threshold and limit value
SO ₂	1 hour	16.03	500	350	µg/m ³	Population	Below alert threshold and limit value
	24 hours	3.46	-	125	µg/m ³	Population	Below limit value
TSP	30 min	391.01	350	500	µg/m ³	Population	Over alert threshold and limit value
	24 hours	58.91	105	150	µg/m ³	Population	Below alert threshold and limit value
PM ₁₀	24 hours	16.99	-	50	µg/m ³	Population	Below limit value
CO	8 hourx	710.10	-	10.000	µg/m ³	Population	Below limit value

The SO₂ concentrations corresponding to the 25th maximum value for 1 hour and the 4th maximum value for 24 hours anticipated to be reached outside the Project site due to the contribution of the Project construction activities are lower than 5% of the respective limit values. The short-term limit values for SO₂, NO₂ si PM₁₀ allow a several times exceeding for each year under consideration. For instance, the SO₂ limit value for 1 hour can be exceeded 24 times a year, but the 25th exceeded value will not comply with the regulations. Thus, the 25th modelled concentration is used for comparison with the SO₂ limit value for 1 hour. Other pollutants and averaging intervals will have other acceptable number of exceeding of the limit value. The maximum daily concentrations of 8-hour CO gliding averages are also low, representing less than 7.5% of the limit value outside the Project area.

The maximum 30 minutes TSP concentration, estimated outside the Project site for construction activities other than roads is 391 µg/m³ at the western boundary of the site. This value exceeds the alert threshold provided by MO 756/1997 (350 µg/m³), but it is below the limit value provided by STAS 12576/1987 (500 µg/m³). The exceeding areas are limited to less than 100m from the Project site.

As previously mentioned, the alert threshold and limit value provided by the Romanian regulations for TSP over 30 minutes represent an exclusive legal requirement which does not exist at international level. The international regulations provide measurements for TSP si PM₁₀ typically at 24 hour intervals. Therefore, the health studies defining the limit values were based on longer averaging periods (i.e. 24 hours or 1 year). For this reason, interpretation of cases of short-term exceeding of TSP limit values should be conducted with precaution. Moreover the EU Directives on air quality (transposed in the national legislation by MO No. 592/2002 and MO 448/2007) provide no limit values for TSP.

The maximum 30-minutes concentrations estimated for the purposes of this analysis represent the upper limit of these parameters being based on extremely conservative working assumptions. Firstly, it is assumed that all potential activities are conducted simultaneously. Even though it is likely that these activities may be conducted in the same day, it should not be assumed that they will be conducted simultaneously at maximum capacity during all 30 minutes averaging intervals. Secondly, the worst case conditions were modelled in view of estimating the impact for a meteorological data set covering a 1 year interval. Given the short period when these adverse conditions may occur, it is very unlikely that a 1 hour meteorological event (considered for the maximum impact prognosis) should occur at the same time as the activities defining the worst case scenario. Thus, the maximum impact may be lower than the foreseen impact.

Te 24-hour maximum impact due to TSP and related to construction activities other than road construction is foreseen at approximately 58,91 µg/m³, which means 56% of the alert threshold for 24 hours and 39% of the limit value. Similar to the 30 minutes TSP impact, it is expected that the 24 hour values are below the limit values.

The maximum PM₁₀ concentrations for 24-hour averaging intervals occurred due to the construction activities other than road construction. The 36th maximum concentration is some 17 µg/m³, which means 34% of the corresponding limit value.

The 19th NO₂ maximum value for 1 hour foreseen outside the Project site is 161.79 µg/m³, in a location within the Project site. This value represents 81% of the NO₂ limit value of 200 µg/m³.

The maximum concentrations foreseen during construction activities for the sensitive receptors within the 15 neighbouring communities are summarized in **Tables 4.2.75 - 4.2.89**. The analysis results at community level indicate that all maximum foreseen values for the 15 communities are below the limit values for each pollutant and each averaging interval. The short-term maximum value range varies from less than 1% to 49% of the relevant limit values, depending on the considered pollutant. The highest TSP concentrations over a 30 minute foreseen interval ($248 \mu\text{g}/\text{m}^3$) represent 49% of the limit values. All other short term concentrations are below 45% of the respective limit values. The annual average concentrations vary from below 1% to 4% of the relevant limit values.

Table 4.2.75 Comparison between maximum concentrations and limit values for Abrud - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
636	NO ₂	1 hour	17.65	400	200	$\mu\text{g}/\text{m}^3$	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.46	-	40	$\mu\text{g}/\text{m}^3$	Population	All constructions; below limit value
	SO ₂	1 hour	3.83	500	350	$\mu\text{g}/\text{m}^3$	Population	Road constr.; below alert threshold and limit value
		24 hours	0.66	-	125	$\mu\text{g}/\text{m}^3$	Population	Road constr.; below limit value
		1 year	0.002	-	20	$\mu\text{g}/\text{m}^3$	Ecosystems	All constructions; below limit value
	TSP	30 min	44.784	350	500	$\mu\text{g}/\text{m}^3$	Population	Constr. non-rutiera; Sub pragul de alerta si valoarea limita
		24 hours	5.771	105	150	$\mu\text{g}/\text{m}^3$	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.389	52.5	75	$\mu\text{g}/\text{m}^3$	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	1.629	-	50	$\mu\text{g}/\text{m}^3$	Population	Non-road constr.; below limit value
		1 year	0.154	-	40	$\mu\text{g}/\text{m}^3$	Population	All constructions; below limit value
	CO	8 hours	23.918	-	10.000	$\mu\text{g}/\text{m}^3$	Population	Road constr.; below limit value
	Cd	1 year	0.00010	-	5	ng/m^3	Population	All constructions; below limit value
	Ni	1 year	0.00066	-	20	ng/m^3	Population	All constructions; below limit value
	PAH, of which:	1 year	0.19	-	-	ng/m^3	-	All constructions
Bnz(a)pyrene	1 year	0.0019	-	1	ng/m^3	Population	All constructions; below limit value	

Table 4.2.76 Comparison between maximum concentrations and limit values for Bisericani - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
555	NO ₂	1 hour	16.58	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.82	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	0.79	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.15	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.003	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	98.381	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	6.072	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.630	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	2.150	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.258	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	52.955	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00011	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00074	-	20	ng/m ³	Population	All constructions; below limit value
	PAHs, of which:	1 year	0.17	-	-	ng/m ³	-	All constructions
Benz(a)pyrene	1 year	0.0017	-	1	ng/m ³	Population	All constructions; below limit value	

Table 4.2.77 Comparison between maximum concentrations and limit values for Bucium Village - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
761	NO ₂	1 hour	17.00	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.43	-	40	µg/m ³	Population	All constructions; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	SO ₂	1 hour	4.93	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.75	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.002	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	51.429	350	500	µg/m ³	Population	Constr. non-rutiera; Sub pragul de alerta si valoarea limita
		24 hours	8.685	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.435	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	2.254	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.162	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	35.114	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00009	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00063	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.21	-	-	ng/m ³	-	All constructions
	Benz(a)pyrene	1 year	0.0021	-	1	ng/m ³	Population	All constructions; below limit value

Table 4.2.78 Comparison between maximum concentrations and limit values for Coasta Hentii - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
934	NO ₂	1 hour	30.33	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.41	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	1.99	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.35	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.002	-	20	µg/m ³	Ecosystems	All constructions; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	TSP	30 min	137.625	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	9.166	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.480	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	2.237	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.219	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	71.620	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00012	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00084	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.18	-	-	ng/m ³	-	All constructions
Benz(a)pyrene	1 year	0.0018	-	1	ng/m ³	Population	All constructions; below limit value	

Table 4.2.79 Comparison between maximum concentrations and limit values for Dogaresti - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
1515	NO ₂	1 hour	26.34	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.35	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	1.82	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.22	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.002	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	79.932	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	9.503	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		1 year	0.347	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	1.860	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.138	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	24.559	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00008	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00057	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.12	-	-	ng/m ³	-	All constructions
	Benz(a)pyrene	1 year	0.0012	-	1	ng/m ³	Population	All constructions; below limit value

Table 4.2.80 Comparison between maximum concentrations and limit values for Floresti - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
146	NO ₂	1 hour	40.86	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	1.01	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	1.48	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.20	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.004	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	149.082	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	12.632	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.957	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	4.886	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.346	-	40	µg/m ³	Population	All constructions; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	CO	8 hours	46.706	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00013	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00084	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.28	-	-	ng/m ³	-	All constructions
	Benz(a)pyrene	1 year	0.0028	-	1	ng/m ³	Population	All constructions; below limit value

Table 4.2.81 Comparison between maximum concentrations and limit values for Garda Barbulesti - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
1573	NO ₂	1 hour	7.03	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.37	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	0.47	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.05	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.002	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	20.845	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	3.257	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.291	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	0.764	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.133	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	8.427	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00006	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00038	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.09	-	-	ng/m ³	-	All constructions

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	Benz(a)pyrene	1 year	0.0009	-	1	ng/m ³	Population	All constructions; below limit value

Table 4.2.82 Comparison between maximum concentrations and limit values for Gura Rosiei - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
1343	NO ₂	1 hour	9.03	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.61	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	1.22	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.21	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.001	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	31.515	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	3.001	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.571	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	0.678	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.160	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	21.462	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00011	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00062	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.61	-	-	ng/m ³	-	All constructions
	Benz(a)pyrene	1 year	0.0061	-	1	ng/m ³	Population	All constructions; below limit value

Table 4.2.83 Comparison between maximum concentrations and limit values for Helesti - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
390	NO ₂	1 hour	37.49	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.66	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	1.24	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.37	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.003	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	217.083	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	19.383	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.893	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	3.875	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.407	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	90.540	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00017	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00118	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.18	-	-	ng/m ³	-	All constructions
Benzo(a) piren	1 year	0.0018	-	1	ng/m ³	Population	All constructions; below limit value	

Table 4.2.84 Comparison between maximum concentrations and limit values for Iacobesti - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
355	NO ₂	1 hour	12.88	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.32	-	40	µg/m ³	Population	All constructions; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	SO ₂	1 hour	1.75	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.23	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.001	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	41.102	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	4.822	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.298	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	1.247	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.104	-	40	µg/m ³	Population	Toate constructiile; Sub valoarea limita
	CO	8 hours	24.847	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00006	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00039	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.2	-	-	ng/m ³	-	All constructions
	Benz(a)pyrene	1 year	0.002	-	1	ng/m ³	Population	All constructions; below limit value

Table 4.2. Comparison between maximum concentrations and limit values for Ignatesti - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
14	NO ₂	1 hour	17.82	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.38	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	2.42	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.41	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.001	-	20	µg/m ³	Ecosystems	All constructions; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	TSP	30 min	53.141	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	5.478	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.348	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	1.463	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.125	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	27.414	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00007	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00048	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.22	-	-	ng/m ³	-	All constructions
	Benz(a)pyrene	1 year	0.0022	-	1	ng/m ³	Population	All constructions; below limit value

Table 4.2.86 Comparison between maximum concentrations and limit values for Petreni - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
960	NO ₂	1 hour	18.08	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.60	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	1.20	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.23	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.002	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	56.466	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	3.898	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		1 year	0.414	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	1.264	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.180	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	65.372	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00008	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00052	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.13	-	-	ng/m ³	-	All constructions
	Benz(a)pyrene	1 year	0.0013	-	1	ng/m ³	Population	All constructions; below limit value

Table 4.2.87 Comparison between maximum concentrations and limit values for Tarina - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
0	NO ₂	1 hour	8.28	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	1.30	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	0.70	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.14	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.005	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	31.027	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	4.295	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.910	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	2.017	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.414	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	17.397	-	10.000	µg/m ³	Population	Road constr.; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	Cd	1 year	0.00019	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00128	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.26	-	-	ng/m ³	-	All constructions
	Benz(a)pyrene	1 year	0.0026	-	1	ng/m ³	Population	All constructions; below limit value

Table 4.2.88 Comparison between maximum concentrations and limit values for Vartop - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
903	NO ₂	1 hour	51.77	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.54	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	1.82	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.22	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.003	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	135.971	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	9.192	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	0.507	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	2.442	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.237	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	48.150	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00015	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00105	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.17	-	-	ng/m ³	-	All constructions
Benz(a)pyrene	1 year	0.0017	-	1	ng/m ³	Population	All constructions; below limit value	

Table 4.2.89 Comparison between maximum concentrations and limit values for the Rosia Montana Protected Zone - Construction

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
0	NO ₂	1 hour	88.88	400	200	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	1.65	-	40	µg/m ³	Population	All constructions; below limit value
	SO ₂	1 hour	2.05	500	350	µg/m ³	Population	Road constr.; below alert threshold and limit value
		24 hours	0.41	-	125	µg/m ³	Population	Road constr.; below limit value
		1 year	0.008	-	20	µg/m ³	Ecosystems	All constructions; below limit value
	TSP	30 min	248.809	350	500	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		24 hours	34.504	105	150	µg/m ³	Population	Non-road constr.; below alert threshold and limit value
		1 year	1.934	52.5	75	µg/m ³	Population	All constructions; below alert threshold and limit value
	PM ₁₀	24 hours	6.450	-	50	µg/m ³	Population	Non-road constr.; below limit value
		1 year	0.964	-	40	µg/m ³	Population	All constructions; below limit value
	CO	8 hours	152.255	-	10.000	µg/m ³	Population	Road constr.; below limit value
	Cd	1 year	0.00060	-	5	ng/m ³	Population	All constructions; below limit value
	Ni	1 year	0.00410	-	20	ng/m ³	Population	All constructions; below limit value
	PAH, of which:	1 year	0.45	-	-	ng/m ³	-	All constructions
Benz(a)pyrene	1 year	0.0045	-	1	ng/m ³	Population	All constructions; below limit value	

Operation Phase

The results obtained based on the Years 9, 10, 12 and 14 scenarios indicate that all maximum values foreseen for the pollutant concentrations outside the Project site caused by the Project operational activities are below the relevant limit value for both areas with sensitive receptors and the other impact areas. **Tables 4.2.90 - 4.2.93** summarize the resulting maximum concentrations for each selected years of the operation phase.

Table 4.2.90 Maximum concentrations and limit values - Year 9 of operation

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
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Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
NO ₂	1 hour	103.815	400	200	µg/m ³	Population	Below alert threshold and limit value
	1 year	1.228	-	40	µg/m ³	Population	Below limit value
SO ₂	1 hour	1.311	500	350	µg/m ³	Population	Below alert threshold and limit value
	24 hours	0.259	-	125	µg/m ³	Population	Below limit value
	1 year	0.023	-	20	µg/m ³	Ecosystems	Below limit value
TSP	30 min	479.115	350	500	µg/m ³	Population	Over alert threshold and limit value
	24 hours	64.708	105	150	µg/m ³	Population	Below alert threshold and limit value
	1 year	3.587	52.5	75	µg/m ³	Population	Below alert threshold and limit value
PM ₁₀	24 hours	5.585	-	50	µg/m ³	Population	Below limit value
	1 year	1.463	-	40	µg/m ³	Population	Below limit value
CO	8 hours	28.166	-	10.000	µg/m ³	Population	Below limit value
Pb	1 year	0.00004	-	0.5	µg/m ³	Population	Below limit value
As	1 year	0.090	-	6	ng/m ³	Population	Below limit value
Cd	1 year	0.840	-	5	ng/m ³	Population	Below limit value
Ni	1 year	5.880	-	20	ng/m ³	Population	Below limit value
PAH, of which:	1 year	0.120	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.0012	-	1	ng/m ³	Population	Below limit value

Table 4.2.91 Maximum concentrations and limit values - Year 10 of operation

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
NO ₂	1 hour	103.794	400	200	µg/m ³	Population	Below alert threshold and limit value
	1 year	1.294	-	40	µg/m ³	Population	Below limit value
SO ₂	1 hour	1.286	500	350	µg/m ³	Population	Below alert threshold and limit value
	24 hours	0.191	-	125	µg/m ³	Population	Below limit value
	1 year	0.023	-	20	µg/m ³	Ecosystems	Below limit value
TSP	30 min	480.032	350	500	µg/m ³	Population	Over alert threshold and limit value
	24 hours	62.993	105	150	µg/m ³	Population	Below alert threshold and limit value
	1 year	3.559	52.5	75	µg/m ³	Population	Below alert threshold and limit value
PM ₁₀	24 hours	5.698	-	50	µg/m ³	Population	Below limit value
	1 year	1.464	-	40	µg/m ³	Population	Below limit value
CO	8 hours	31.318	-	10.000	µg/m ³	Population	Below limit value
Pb	1 year	0.00004	-	0.5	µg/m ³	Population	Below limit value
As	1 year	0.090	-	6	ng/m ³	Population	Below limit value

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
Cd	1 year	0.860	-	5	ng/m ³	Population	Below limit value
Ni	1 year	6.020	-	20	ng/m ³	Population	Below limit value
PAH, of which:	1 year	0.110	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.0011	-	1	ng/m ³	Population	Below limit value

Table 4.2.92 Maximum concentrations and limit values - Year 12 of operation

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
NO ₂	1 hour	105.564	400	200	µg/m ³	Population	Below alert threshold and limit value
	1 year	1.711	-	40	µg/m ³	Population	Below limit value
SO ₂	1 hour	1.334	500	350	µg/m ³	Population	Below alert threshold and limit value
	24 hours	0.160	-	125	µg/m ³	Population	Below limit value
	1 year	0.024	-	20	µg/m ³	Ecosystems	Below limit value
TSP	30 min	368.697	350	500	µg/m ³	Population	Over alert threshold and limit value
	24 hours	48.619	105	150	µg/m ³	Population	Below alert threshold and limit value
	1 year	2.728	52.5	75	µg/m ³	Population	Below alert threshold and limit value
PM ₁₀	24 hours	4.874	-	50	µg/m ³	Population	Below limit value
	1 year	1.200	-	40	µg/m ³	Population	Below limit value
CO	8 hours	61.935	-	10.000	µg/m ³	Population	Below limit value
Pb	1 year	0.00004	-	0.5	µg/m ³	Population	Below limit value
As	1 year	0.090	-	6	ng/m ³	Population	Below limit value
Cd	1 year	1.120	-	5	ng/m ³	Population	Below limit value
Ni	1 year	7.870	-	20	ng/m ³	Population	Below limit value
PAH, of which:	1 year	0.140	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.0014	-	1	ng/m ³	Population	Below limit value

Table 4.2.93 Maximum concentrations and limit values - Year 14 of operation

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
NO ₂	1 hour	134.807	400	200	µg/m ³	Population	Below alert threshold and limit value
	1 year	1.347	-	40	µg/m ³	Population	Below limit value
SO ₂	1 hour	1.286	500	350	µg/m ³	Population	Below alert threshold and limit value
	24 hours	0.160	-	125	µg/m ³	Population	Below limit value
	1 year	0.024	-	20	µg/m ³	Ecosystems	Below limit value

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
TSP	30 min	491.904	350	500	µg/m ³	Population	Over alert threshold and limit value
	24 hours	70.005	105	150	µg/m ³	Population	Below alert threshold and limit value
	1 year	3.837	52.5	75	µg/m ³	Population	Below alert threshold and limit value
PM ₁₀	24 hours	6.029	-	50	µg/m ³	Population	Below limit value
	1 year	1.563	-	40	µg/m ³	Population	Below limit value
CO	8 hours	81.840	-	10.000	µg/m ³	Population	Below limit value
Pb	1 year	0.00004	-	0.5	µg/m ³	Population	Below limit value
As	1 year	0.090	-	6	ng/m ³	Population	Below limit value
Cd	1 year	0.900	-	5	ng/m ³	Population	Below limit value
Ni	1 year	6.330	-	20	ng/m ³	Population	Below limit value
PAH, of which:	1 year	0.160	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.0016	-	1	ng/m ³	Population	Below limit value

The annual average concentrations foreseen for all pollutants under review, outside the Project site, represent less than 40% of the relevant limit value in Year 12. The maximum annual values foreseen for sensitive receptors within the 15 communities vary between below 1% and below 5% of the relevant limit. **Tables 4.2.94 - 4.2.108** summarize the long-term impact for each of the 15 neighbouring communities. Similar to the construction phase, the annual average emissions are not considered as generating a significant impact upon the long-term exposure.

The foreseen short-term average SO₂ emissions show very low values below 1% of the relevant limit values. The 25th value of the 1-hour maximum concentration is of 1.33 µg/m³ in Year 12, much below the limit value of 350 µg/m³. Similarly, the 4th maximum concentration over 24 hours foreseen for areas outside the Project site was of 0.26 µg/m³ reached in Year 9 of operation.

The results for CO impact (8 hour averages) in Year 14 show a maximum concentration outside the Project site of 82 µg/m³, which is less than 1 % of the limit value of 10,000 µg/m³. The maximum CO emissions have no significant impact on the surrounding areas.

The maximum concentrations foreseen outside the Project site for TSP 30 minute averages in Year 14 are expected to occur at the western site boundary at a level of 491 µg/m³ which represent an exceeding of the TSP alert threshold for 30 minutes. This exceeding will occur over limited areas west of the mining tenement boundary, however it will decrease rapidly (over a distance of 300m) as the distance to the Project site increases. Similar to the construction phase, these values should be considered as the upper limit of the potential impact assessment. Even though the operations are continuous being likely to be carried out in the worst meteorological conditions, it is not expected that the hourly emissions are generated simultaneously by all sources, estimating that the actual value will be lower.

The maximum 24 hour TSP concentration was estimated at 70 µg/m³, which is below the alert threshold (105 µg/m³) and below the limit value (150 µg/m³).

Similar to the construction activities, the PM₁₀ concentrations (the 36th value) over 24 hours are estimated as below the relevant limit values. The 35th maximum concentration outside the Project site was estimated at 6 µg/m³, which is only 12% of the limit value provided by the legal regulations.

The 19th maximum NO₂ concentration for 1 hour was estimated at 134.8 µg/m³ at the northern site limit, corresponding to Year 14. This value is below the 200 µg/m³ limit value. In addition, the similar NO₂ values for all other years selected for modelling reached levels of 105.5 µg/m³ or lower. The main emission source is caused by the road traffic. In this scenario, it was assumed that the ore/rock haulage dump trucks are used simultaneously at maximum capacity throughout the 1 hour averaging interval, depending on the loading and unloading capacity. While difficult to determine precisely, it is however unlikely that the ore/rock haulage trucks are in operation simultaneously loaded to the maximum capacity for an hour.

The detailed analysis of the maximum short-term impact obtained by modelling the air dispersion within the 15 neighbouring communities is presented in the **Project Engineering Review Report** and

summarized in **Tables 4.2.94 - 4.2.108**. As shown in the tables, the maximum foreseen concentrations in any of the 15 communities are below the relevant limit values for all pollutants under consideration.

The maximum 30 minute TSP concentrations for the Rosia Montana area indicate a value of 120.6 $\mu\text{g}/\text{m}^3$, which is below the limit value and alert threshold. Similarly, the 19th maximum NO_2 value for 1 hour is of 81.4 $\mu\text{g}/\text{m}^3$, estimated also for the Rosia Montana area. This value is approximately 40% of the limit value. The concentrations in the neighbouring communities will reach lower maximum values.

Table 4.2.94 Comparison between maximum concentrations and limit values for Abrud - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
636	NO ₂	1 hour	21.065	400	200	$\mu\text{g}/\text{m}^3$	Population	Year 12; below alert threshold and limit value
		1 year	0.212	-	40	$\mu\text{g}/\text{m}^3$	Population	Year 12; below limit value
	SO ₂	1 hour	0.144	500	350	$\mu\text{g}/\text{m}^3$	Population	Year 9; below alert threshold and limit value
		24 hours	0.031	-	125	$\mu\text{g}/\text{m}^3$	Population	Year 9; below limit value
		1 year	0.003	-	20	$\mu\text{g}/\text{m}^3$	Ecosystems	Year 12; below limit value
	TSP	30 min	49.160	350	500	$\mu\text{g}/\text{m}^3$	Population	Year 10; below alert threshold and limit value
		24 hours	5.749	105	150	$\mu\text{g}/\text{m}^3$	Population	Year 10; below alert threshold and limit value
		1 year	0.386	52.5	75	$\mu\text{g}/\text{m}^3$	Population	Year 14; below alert threshold and limit value
	PM ₁₀	24 hours	0.723	-	50	$\mu\text{g}/\text{m}^3$	Population	Year 14; below limit value
		1 year	0.177	-	40	$\mu\text{g}/\text{m}^3$	Population	Year 9; below limit value
	CO	8 hours	5.968	-	10.000	$\mu\text{g}/\text{m}^3$	Population	Year 12; below limit value
	Pb	1 year	0	-	0.5	$\mu\text{g}/\text{m}^3$	Population	Year 9; below limit value
	As	1 year	0.01	-	6	ng/m^3	Population	Year 9; below limit value
	Cd	1 year	0.13	-	5	ng/m^3	Population	Year 12; below limit value
	Ni	1 year	0.9	-	20	ng/m^3	Population	Year 12; below limit value
PAH, of which:	1 year	0.02	-	-	ng/m^3	-	Year 12	
Bnz(a)pyrene	1 year	0.0002	-	1	ng/m^3	Population	Year 12; below limit value	

Table 4.2.95 Comparison between maximum concentrations and limit values for Bisericani - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
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Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
555	NO ₂	1 hour	34.482	400	200	µg/m ³	Population	Year 9; below alert threshold and limit value
		1 year	0.314	-	40	µg/m ³	Population	Year 9; below limit value
	SO ₂	1 hour	0.419	500	350	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	0.063	-	125	µg/m ³	Population	Year 9; below limit value
		1 year	0.005	-	20	µg/m ³	Ecosystems	Year 9; below limit value
	TSP	30 min	39.955	350	500	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	6.665	105	150	µg/m ³	Population	Year 9; below alert threshold and limit value
		1 year	0.400	52.5	75	µg/m ³	Population	Year 9; below alert threshold and limit value
	PM ₁₀	24 hours	0.985	-	50	µg/m ³	Population	Year 10; below limit value
		1 year	0.218	-	40	µg/m ³	Population	Year 9; below limit value
	CO	8 hours	12.865	-	10.000	µg/m ³	Population	Year 9; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.21	-	5	ng/m ³	Population	Year 9; below limit value
	Ni	1 year	1.45	-	20	ng/m ³	Population	Year 9; below limit value
PAH, of which:	1 year	0.02	-	-	ng/m ³	-	Year 9	
Benz(a)pyrene	1 year	0.0002	-	1	ng/m ³	Population	Year 9; below limit value	

Table 4.2.96 Comparison between maximum concentrations and limit values for Bucium Village - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
761	NO ₂	1 hour	19.732	400	200	µg/m ³	Population	Year 12; below alert threshold and limit value
		1 year	0.206	-	40	µg/m ³	Population	Year 12; below limit value
	SO ₂	1 hour	0.276	500	350	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	0.042	-	125	µg/m ³	Population	Year 12; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		1 year	0.005	-	20	µg/m ³	Ecosystems	Year 9; below limit value
	TSP	30 min	55.578	350	500	µg/m ³	Population	Year 10; below alert threshold and limit value
		24 hours	5.165	105	150	µg/m ³	Population	Year 12; below alert threshold and limit value
		1 year	0.399	52.5	75	µg/m ³	Population	Year 14; below alert threshold and limit value
	PM ₁₀	24 hours	0.814	-	50	µg/m ³	Population	Year 10; below limit value
		1 year	0.200	-	40	µg/m ³	Population	Year 9; below limit value
	CO	8 hours	8.336	-	10.000	µg/m ³	Population	Year 12; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.12	-	5	ng/m ³	Population	Year 12; below limit value
	Ni	1 year	0.83	-	20	ng/m ³	Population	Year 12; below limit value
	PAH, of which:	1 year	0.02	-	-	ng/m ³	-	Year 9
	Benz(a)pyrene	1 year	0.0002	-	1	ng/m ³	Population	Year 9; below limit value

Table 4.2.97 Comparison between maximum concentrations and limit values for Coasta Hentii - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
934	NO ₂	1 hour	35.969	400	200	µg/m ³	Population	Year 10; below alert threshold and limit value
		1 year	0.297	-	40	µg/m ³	Population	Year 12; below limit value
	SO ₂	1 hour	0.267	500	350	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	0.035	-	125	µg/m ³	Population	Year 10; below limit value
		1 year	0.003	-	20	µg/m ³	Ecosystems	Year 12; below limit value
	TSP	30 min	84.446	350	500	µg/m ³	Population	Year 14; below alert threshold and limit value
		24 hours	5.397	105	150	µg/m ³	Population	Year 14; below alert threshold and limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		1 year	0.417	52.5	75	µg/m ³	Population	Year 10; below alert threshold and limit value
	PM ₁₀	24 hours	1.046	-	50	µg/m ³	Population	Year 12; below limit value
		1 year	0.203	-	40	µg/m ³	Population	Year 10; below limit value
	CO	8 hours	11.890	-	10.000	µg/m ³	Population	Year 10; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0.01	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.19	-	5	ng/m ³	Population	Year 12; below limit value
	Ni	1 year	1.33	-	20	ng/m ³	Population	Year 12; below limit value
	PAH, of which:	1 year	0.02	-	-	ng/m ³	-	Year 9
	Benz(a)pyrene	1 year	0.0002	-	1	ng/m ³	Population	Year 9; below limit value

Table 4.2.98 Comparison between maximum concentrations and limit values for Dogaresti - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
1515	NO ₂	1 hour	25.028	400	200	µg/m ³	Population	Year 12; below alert threshold and limit value
		1 year	0.197	-	40	µg/m ³	Population	Year 12; below limit value
	SO ₂	1 hour	0.204	500	350	µg/m ³	Population	Year 12; below alert threshold and limit value
		24 hours	0.026	-	125	µg/m ³	Population	Year 9; below limit value
		1 year	0.003	-	20	µg/m ³	Ecosystems	Year 12; below limit value
	TSP	30 min	53.836	350	500	µg/m ³	Population	Year 10; below alert threshold and limit value
		24 hours	4.465	105	150	µg/m ³	Population	Year 10; below alert threshold and limit value
		1 year	0.292	52.5	75	µg/m ³	Population	Year 14; below alert threshold and limit value
	PM ₁₀	24 hours	0.695	-	50	µg/m ³	Population	Year 12; below limit value
		1 year	0.144	-	40	µg/m ³	Population	Year 9; below limit value
	CO	8 hours	7.191	-	10.000	µg/m ³	Population	Year 12; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.13	-	5	ng/m ³	Population	Year 12; below limit value
	Ni	1 year	0.88	-	20	ng/m ³	Population	Year 12; below limit value
	PAH, of which:	1 year	0.02	-	-	ng/m ³	-	Year 12
	Benz(a)pyrene	1 year	0.0002	-	1	ng/m ³	Population	Year 12; below limit value

Table 4.2.99 Comparison between maximum concentrations and limit values for Floresti - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
146	NO ₂	1 hour	35.514	400	200	µg/m ³	Population	Year 9; below alert threshold and limit value
		1 year	0.421	-	40	µg/m ³	Population	Year 9; below limit value
	SO ₂	1 hour	0.862	500	350	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	0.148	-	125	µg/m ³	Population	Year 9; below limit value
		1 year	0.011	-	20	µg/m ³	Ecosystems	Year 9; below limit value
	TSP	30 min	56.487	350	500	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	9.423	105	150	µg/m ³	Population	Year 10; below alert threshold and limit value
		1 year	0.617	52.5	75	µg/m ³	Population	Year 9; below alert threshold and limit value
	PM ₁₀	24 hours	1.950	-	50	µg/m ³	Population	Year 10; below limit value
		1 year	0.368	-	40	µg/m ³	Population	Year 9; below limit value
	CO	8 hours	14.683	-	10.000	µg/m ³	Population	Year 9; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.26	-	5	ng/m ³	Population	Year 9; below limit value
	Ni	1 year	1.79	-	20	ng/m ³	Population	Year 9; below limit value
PAH, of which:	1 year	0.04	-	-	ng/m ³	-	Year 9	

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	Benz(a)pyrene	1 year	0.0004	-	1	ng/m ³	Population	Year 9; below limit value

Table 4.2.100 Comparison between maximum concentrations and limit values for Garda Barbulesti - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
1573	NO ₂	1 hour	8.138	400	200	µg/m ³	Population	Year 12; below alert threshold and limit value
		1 year	0.145	-	40	µg/m ³	Population	Year 12; below limit value
	SO ₂	1 hour	0.073	500	350	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	0.011	-	125	µg/m ³	Population	Year 9; below limit value
		1 year	0.001	-	20	µg/m ³	Ecosystems	Year 12; below limit value
	TSP	30 min	13.654	350	500	µg/m ³	Population	Year 12; below alert threshold and limit value
		24 hours	2.114	105	150	µg/m ³	Population	Year 12; below alert threshold and limit value
		1 year	0.161	52.5	75	µg/m ³	Population	Year 9; below alert threshold and limit value
	PM ₁₀	24 hours	0.378	-	50	µg/m ³	Population	Year 12; below limit value
		1 year	0.080	-	40	µg/m ³	Population	Year 9; below limit value
	CO	8 hours	3.804	-	10.000	µg/m ³	Population	Year 14; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.09	-	5	ng/m ³	Population	Year 12; below limit value
	Ni	1 year	0.65	-	20	ng/m ³	Population	Year 12; below limit value
PAH, of which:	1 year	0.01	-	-	ng/m ³	-	Year 9	
Benz(a)pyrene	1 year	0.0001	-	1	ng/m ³	Population	Year 9; below limit value	

Table 4.2.101 Comparison between maximum concentrations and limit values for Gura Rosiei - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
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Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
1343	NO ₂	1 hour	10.510	400	200	µg/m ³	Population	Year 12; below alert threshold and limit value
		1 year	0.082	-	40	µg/m ³	Population	Year 12; below limit value
	SO ₂	1 hour	0.123	500	350	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	0.014	-	125	µg/m ³	Population	Year 9; below limit value
		1 year	0.001	-	20	µg/m ³	Ecosystems	Year 12; below limit value
	TSP	30 min	30.139	350	500	µg/m ³	Population	Year 14; below alert threshold and limit value
		24 hours	2.537	105	150	µg/m ³	Population	Year 10; below alert threshold and limit value
		1 year	0.143	52.5	75	µg/m ³	Population	Year 14; below alert threshold and limit value
	PM ₁₀	24 hours	0.321	-	50	µg/m ³	Population	Year 10; below limit value
		1 year	0.067	-	40	µg/m ³	Population	Year 10; below limit value
	CO	8 hours	3.248	-	10.000	µg/m ³	Population	Year 12; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.05	-	5	ng/m ³	Population	Year 12; below limit value
Ni	1 year	0.36	-	20	ng/m ³	Population	Year 12; below limit value	
PAH, of which:	1 year	0.01	-	-	ng/m ³	-	Year 12	
Benz(a)pyrene	1 year	0.0001	-	1	ng/m ³	Population	Year 12; below limit value	

Table 4.2.102 Comparison between maximum concentrations and limit values for Helesti - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
390	NO ₂	1 hour	80.456	400	200	µg/m ³	Population	Year 14; below alert threshold and limit value
		1 year	0.476	-	40	µg/m ³	Population	Year 14; below limit value
	SO ₂	1 hour	0.528	500	350	µg/m ³	Population	Year 14; below alert threshold and limit value
		24 hours	0.071	-	125	µg/m ³	Population	Year 9; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		1 year	0.007	-	20	µg/m ³	Ecosystems	Year 9; below limit value
	TSP	30 min	114.281	350	500	µg/m ³	Population	Year 14; below alert threshold and limit value
		24 hours	12.773	105	150	µg/m ³	Population	Year 14; below alert threshold and limit value
		1 year	0.490	52.5	75	µg/m ³	Population	Year 14; below alert threshold and limit value
	PM ₁₀	24 hours	1.413	-	50	µg/m ³	Population	Year 14; below limit value
		1 year	0.323	-	40	µg/m ³	Population	Year 14; below limit value
	CO	8 hours	63.386	-	10.000	µg/m ³	Population	Year 14; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.22	-	5	ng/m ³	Population	Year 9; below limit value
	Ni	1 year	1.51	-	20	ng/m ³	Population	Year 9; below limit value
	PAH, of which:	1 year	0.08	-	-	ng/m ³	-	Year 14
	Benz(a)pyrene	1 year	0.0008	-	1	ng/m ³	Population	Year 14; below limit value

Table 4.2.103 Comparison between maximum concentrations and limit values for Iacobesti - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
355	NO ₂	1 hour	18.461	400	200	µg/m ³	Population	Year 12; below alert threshold and limit value
		1 year	0.134	-	40	µg/m ³	Population	Year 12; below limit value
	SO ₂	1 hour	0.191	500	350	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	0.028	-	125	µg/m ³	Population	Year 9; below limit value
		1 year	0.002	-	20	µg/m ³	Ecosystems	Year 12; below limit value
	TSP	30 min	59.405	350	500	µg/m ³	Population	Year 10; below alert threshold and limit value
		24 hours	4.220	105	150	µg/m ³	Population	Year 14; below alert threshold and limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		1 year	0.264	52.5	75	µg/m ³	Population	Year 10; below alert threshold and limit value
	PM ₁₀	24 hours	0.587	-	50	µg/m ³	Population	Year 10; below limit value
		1 year	0.125	-	40	µg/m ³	Population	Year 10; below limit value
	CO	8 hours	4.477	-	10.000	µg/m ³	Population	Year 12; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.09	-	5	ng/m ³	Population	Year 12; below limit value
	Ni	1 year	0.62	-	20	ng/m ³	Population	Year 12; below limit value
	PAH, of which:	1 year	0.01	-	-	ng/m ³	-	Year 9
	Benz(a)pyrene	1 year	0.0001	-	1	ng/m ³	Population	Year 9; below limit value

Table 4.2.104 Comparison between maximum concentrations and limit values for Ignatesti - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
14	NO ₂	1 hour	23.023	400	200	µg/m ³	Population	Year 12; below alert threshold and limit value
		1 year	0.168	-	40	µg/m ³	Population	Year 12; below limit value
	SO ₂	1 hour	0.237	500	350	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	0.033	-	125	µg/m ³	Population	Year 9; below limit value
		1 year	0.002	-	20	µg/m ³	Ecosystems	Year 12; below limit value
	TSP	30 min	57.492	350	500	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	4.820	105	150	µg/m ³	Population	Year 10; below alert threshold and limit value
		1 year	0.329	52.5	75	µg/m ³	Population	Year 10; below alert threshold and limit value
	PM ₁₀	24 hours	0.703	-	50	µg/m ³	Population	Year 10; below limit value
		1 year	0.155	-	40	µg/m ³	Population	Year 10; below limit value
	CO	8 hours	5.058	-	10.000	µg/m ³	Population	Year 12; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0.01	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.11	-	5	ng/m ³	Population	Year 12; below limit value
Ni	1 year	0.79	-	20	ng/m ³	Population	Year 12; below limit value	
PAH, of which:	1 year	0.01	-	-	ng/m ³	-	Year 9	
Benz(a)pyrene	1 year	0.0001	-	1	ng/m ³	Population	Year 9; below limit value	

Table 4.2.105 Comparison between maximum concentrations and limit values for Petreni - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
960	NO ₂	1 hour	20.518	400	200	µg/m ³	Population	Year 9; below alert threshold and limit value
		1 year	0.206	-	40	µg/m ³	Population	Year 9; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	SO ₂	1 hour	0.277	500	350	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	0.043	-	125	µg/m ³	Population	Year 9; below limit value
		1 year	0.003	-	20	µg/m ³	Ecosystems	Year 9; below limit value
	TSP	30 min	44.629	350	500	µg/m ³	Population	Year 9; below alert threshold and limit value
		24 hours	2.787	105	150	µg/m ³	Population	Year 10; below alert threshold and limit value
		1 year	0.258	52.5	75	µg/m ³	Population	Year 9; below alert threshold and limit value
	PM ₁₀	24 hours	0.567	-	50	µg/m ³	Population	Year 10; below limit value
		1 year	0.139	-	40	µg/m ³	Population	Year 9; below limit value
	CO	8 hours	11.041	-	10.000	µg/m ³	Population	Year 10; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.13	-	5	ng/m ³	Population	Year 9; below limit value
	Ni	1 year	0.91	-	20	ng/m ³	Population	Year 9; below limit value
	PAH, of which:	1 year	0.02	-	-	ng/m ³	-	Year 9
Benz(a)pyrene	1 year	0.0002	-	1	ng/m ³	Population	Year 9; below limit value	

Table 4.2.106 Comparison between maximum concentrations and limit values for Tarina - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
0	NO ₂	1 hour	21.671	400	200	µg/m ³	Population	Year 12; below alert threshold and limit value
		1 year	1.079	-	40	µg/m ³	Population	Year 12; below limit value
	SO ₂	1 hour	0.185	500	350	µg/m ³	Population	Year 12; below alert threshold and limit value
		24 hours	0.041	-	125	µg/m ³	Population	Year 12; below limit value
		1 year	0.010	-	20	µg/m ³	Ecosystems	Year 12; below limit value
	TSP	30 min	16.693	350	500	µg/m ³	Population	Year 12; below alert threshold and limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		24 hours	4.239	105	150	µg/m ³	Population	Year 12; below alert threshold and limit value
		1 year	0.907	52.5	75	µg/m ³	Population	Year 12; below alert threshold and limit value
	PM ₁₀	24 hours	1.253	-	50	µg/m ³	Population	Year 12; below limit value
		1 year	0.412	-	40	µg/m ³	Population	Year 12; below limit value
	CO	8 hours	5.272	-	10.000	µg/m ³	Population	Year 12; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0.01	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.84	-	5	ng/m ³	Population	Year 12; below limit value
	Ni	1 year	5.85	-	20	ng/m ³	Population	Year 12; below limit value
	PAH, of which:	1 year	0.05	-	-	ng/m ³	-	Year 12
	Benz(a)pyrene	1 year	0.0005	-	1	ng/m ³	Population	Year 12; below limit value

Table 4.2.107 Comparison between maximum concentrations and limit values for Vartop - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
903	NO ₂	1 hour	28.340	400	200	µg/m ³	Population	Year 14; below alert threshold and limit value
		1 year	0.281	-	40	µg/m ³	Population	Year 12; below limit value
	SO ₂	1 hour	0.204	500	350	µg/m ³	Population	Year 14; below alert threshold and limit value
		24 hours	0.033	-	125	µg/m ³	Population	Year 12; below limit value
		1 year	0.003	-	20	µg/m ³	Ecosystems	Year 12; below limit value
	TSP	30 min	65.437	350	500	µg/m ³	Population	Year 14; below alert threshold and limit value
		24 hours	6.778	105	150	µg/m ³	Population	Year 14; below alert threshold and limit value
		1 year	0.458	52.5	75	µg/m ³	Population	Year 14; below alert threshold and limit value
	PM ₁₀	24 hours	0.999	-	50	µg/m ³	Population	Year 14; below limit value
		1 year	0.198	-	40	µg/m ³	Population	Year 14; below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	CO	8 hours	13.172	-	10.000	µg/m ³	Population	Year 14; below limit value
	Pb	1 year	0	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0.01	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	0.18	-	5	ng/m ³	Population	Year 12; below limit value
	Ni	1 year	1.25	-	20	ng/m ³	Population	Year 12; below limit value
	PAH, of which:	1 year	0.02	-	-	ng/m ³	-	Year 12
	Benz(a)pyrene	1 year	0.0002	-	1	ng/m ³	Population	Year 12; below limit value

Table 4.2.108 Comparison between maximum concentrations and limit values for the Rosia Montana Protected Zone - Operation Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
0	NO ₂	1 hour	81.457	400	200	µg/m ³	Population	Year 14; below alert threshold and limit value
		1 year	1.665	-	40	µg/m ³	Population	Year 12; below limit value
	SO ₂	1 hour	0.568	500	350	µg/m ³	Population	Year 14; below alert threshold and limit value
		24 hours	0.086	-	125	µg/m ³	Population	Year 12; below limit value
		1 year	0.015	-	20	µg/m ³	Ecosystems	Year 12; below limit value
	TSP	30 min	120.584	350	500	µg/m ³	Population	Year 14; below alert threshold and limit value
		24 hours	10.868	105	150	µg/m ³	Population	Year 14; below alert threshold and limit value
		1 year	1.525	52.5	75	µg/m ³	Population	Year 12; below alert threshold and limit value
	PM ₁₀	24 hours	2.304	-	50	µg/m ³	Population	Year 14; below limit value
		1 year	0.748	-	40	µg/m ³	Population	Year 12; below limit value
	CO	8 hours	32.570	-	10.000	µg/m ³	Population	Year 14; below limit value
	Pb	1 year	0.00001	-	0.5	µg/m ³	Population	Year 9; below limit value
	As	1 year	0.01	-	6	ng/m ³	Population	Year 9; below limit value
	Cd	1 year	1.1	-	5	ng/m ³	Population	Year 12; below limit value
Ni	1 year	7.73	-	20	ng/m ³	Population	Year 12; below limit value	

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	PAH, of which:	1 year	0.13	-	-	ng/m ³	-	Year 14
	Benz(a)pyrene	1 year	0.0013	-	1	ng/m ³	Population	Year 14; below limit value

Decommissioning/Closure Phase

The analysis of data obtained by air dispersion modeling for the Project decommissioning/closure phase indicates that all pollutant concentrations are below the relevant limit values and threshold values in all points outside the Project site. **Tables 4.2.109 si 4.2.110** summarize the modeling impact data.

Table 4.2.109 Maximum concentrations and limit values - Closure Phase (annual average)

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
NO ₂	1 year	3.340	-	40	µg/m ³	Population	Below limit value
SO ₂	1 year	0.031	-	20	µg/m ³	Ecosystems	Below limit value
TSP	1 year	0.324	52.5	75	µg/m ³	Population	Below alert threshold and limit value
PM ₁₀	1 year	0.088	-	40	µg/m ³	Population	Below limit value
Cd	1 year	0.00269	-	5	ng/m ³	Population	Below limit value
Ni	1 year	0.019	-	20	ng/m ³	Population	Below limit value
PAH, of which:	1 year	0.018	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.00018	-	1	ng/m ³	Population	Below limit value

Table 4.2.110 Maximum concentrations and limit values - Closure Phase (short-term averages)

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV)	Measurement Unit	Receptor corresp. to the limit value	Comments
NO ₂	1 hour	159.68	400	200	µg/m ³	Population	Below alert threshold and limit value
SO ₂	1 hour	1.02	500	350	µg/m ³	Population	Below alert threshold and limit value
	24 hours	0.19	-	125	µg/m ³	Population	Below limit value
TSP	30 min	97.98	350	500	µg/m ³	Population	Below alert threshold and limit value
	24 hours	6.09	105	150	µg/m ³	Population	Below alert threshold and limit value

Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV)	Measurement Unit	Receptor corresp. to the limit value	Comments
PM ₁₀	24 hours	0.27	-	50	µg/m ³	Population	Below limit value
CO	8 hours	22.89	-	10.000	µg/m ³	Population	Below limit value

The maximum TSP concentration for 30 minutes estimated outside the Project site is of some 100 µg/m³, representing 20 % of the limit value of 500 µg/m³.

The 19th maximum NO₂ concentration for 1 hour is close to the limit value with a concentration of 160 µg/m³. The maximum value is recorded in the north-western part of the site, near the no. 1 main road. The maximum foreseen value represents 80% of the limit value (200 µg/m³).

The values calculated for all other pollutants in the closure phase are below the relevant limit values (8.3% or less) and will not be further discussed.

Tables 4.2.110 - 4.2.124 summarize the maximum foreseen impact for all 15 communities representing sensitive receptors. As shown in the tables, all maximum foreseen concentrations are below the relevant limit values. The maximum TSP concentrations for 30 minutes are of 14.5 µg/m³, representing only 2.9% of the relevant limit value, which is also below the alert threshold. The maximum NO₂ concentration for 1 hour averaging intervals within sensitive receptor areas is of 160 µg/m³ (80% of the limit value), near no. 1 main road and close to the Gura Rosiei locality. All other pollutants represent less than 1% of the relevant limit values, their impact being considered insignificant.

Table 4.2.110 Comparison between maximum concentrations and limit values for Abrud - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
636	NO ₂	1 hour	2.6519	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0329	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0179	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0033	-	125	µg/m ³	Population	Below limit value
		1 year	0.0003	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	8.701	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.818	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.063	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.037	-	50	µg/m ³	Population	Below limit value
		1 year	0.014	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	1.3611	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00002	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00017	-	20	ng/m ³	Population	Below limit value
PAH, of which:	1 year	0.00234	-	-	ng/m ³	-	-	

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	Benz(a)pyrene	1 year	0.0000234	-	1	ng/m ³	Population	Below limit value

Table 4.2.111 Comparison between maximum concentrations and limit values for Bisericani - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
555	NO ₂	1 hour	0.6467	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0088	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0039	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0010	-	125	µg/m ³	Population	Below limit value
		1 year	0.0001	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	2.957	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.272	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.025	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.010	-	50	µg/m ³	Population	Below limit value
		1 year	0.006	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	0.64593	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00001	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00005	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00095	-	-	ng/m ³	-	-
	Benz(a)pyrene	1 year	0.0000095	-	1	ng/m ³	Population	Below limit value

Table 4.2.112 Comparison between maximum concentrations and limit values for Bucium Village - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
761	NO ₂	1 hour	3.3292	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0320	-	40	µg/m ³	Population	Below limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
	SO ₂	1 hour	0.0225	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0045	-	125	µg/m ³	Population	Below limit value
		1 year	0.0003	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	14.475	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	1.001	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.094	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.046	-	50	µg/m ³	Population	Below limit value
		1 year	0.020	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	2.79258	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00002	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00017	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00393	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.0000393	-	1	ng/m ³	Population	Below limit value	

Table 4.2.113
- Closure Phase

Comparison between maximum concentrations and limit values for Coasta Hentii

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
934	NO ₂	1 hour	3.8696	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0787	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0266	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0044	-	125	µg/m ³	Population	Below limit value
		1 year	0.0007	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	5.823	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.289	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.048	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.020	-	50	µg/m ³	Population	Below limit value
		1 year	0.011	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	1.17099	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00006	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00043	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00127	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.0000127	-	1	ng/m ³	Population	Below limit value	

Table 4.2.114
- Closure Phase

Comparison between maximum concentrations and limit values for Dogarest -

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
1515	NO ₂	1 hour	3.2623	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0152	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0203	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0028	-	125	µg/m ³	Population	Below limit value
		1 year	0.0001	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	14.011	350	500	µg/m ³	Population	Below alert threshold and limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		24 hours	0.593	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.033	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.015	-	50	µg/m ³	Population	Below limit value
		1 year	0.007	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	1.57833	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00001	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00008	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00129	-	-	ng/m ³	-	-
	Benz(a)pyrene	1 year	0.0000129	-	1	ng/m ³	Population	Below limit value

Table 4.2.115 Comparison between maximum concentrations and limit values for Floresti - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
146	NO ₂	1 hour	0.7115	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0105	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0045	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0010	-	125	µg/m ³	Population	Below limit value
		1 year	0.0001	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	2.717	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.180	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.036	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.012	-	50	µg/m ³	Population	Below limit value
		1 year	0.008	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	0.47506	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00001	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00005	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00131	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.0000131	-	1	ng/m ³	Population	Below limit value	

Table 4.2.116 Comparison between maximum concentrations and limit values for Garda Barbulesti - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
1573	NO ₂	1 hour	0.5328	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0140	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0035	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0008	-	125	µg/m ³	Population	Below limit value
		1 year	0.0001	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	3.302	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.166	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.013	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.009	-	50	µg/m ³	Population	Below limit value
		1 year	0.003	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	0.35856	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00001	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00008	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00041	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.0000041	-	1	ng/m ³	Population	Below limit value	

Table 4.2.117 Comparison between maximum concentrations and limit values for Gura Rosie - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
1343	NO ₂	1 hour	159.6820	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	2.4114	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	1.0151	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.1923	-	125	µg/m ³	Population	Below limit value
		1 year	0.0227	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	5.415	350	500	µg/m ³	Population	Below alert threshold and limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		24 hours	0.260	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.222	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.012	-	50	µg/m ³	Population	Below limit value
		1 year	0.061	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	22.8894	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00194	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.01365	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00068	-	-	ng/m ³	-	-
	Benz(a)pyrene	1 year	0.0000068	-	1	ng/m ³	Population	Below limit value

Table 4.2.118 Comparison between maximum concentrations and limit values for Helesti - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
390	NO ₂	1 hour	0.7808	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0095	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0055	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0009	-	125	µg/m ³	Population	Below limit value
		1 year	0.0001	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	3.520	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.325	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.031	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.011	-	50	µg/m ³	Population	Below limit value
		1 year	0.007	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	0.38848	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00001	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00005	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.0011	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.000011	-	1	ng/m ³	Population	Below limit value	

Table 4.2.119 Comparison between maximum concentrations and limit values for Iacobesti - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
355	NO ₂	1 hour	18.9410	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.4329	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.1278	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0280	-	125	µg/m ³	Population	Below limit value
		1 year	0.0041	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	11.155	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.627	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.068	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.021	-	50	µg/m ³	Population	Below limit value
		1 year	0.017	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	3.20532	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00035	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00244	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00122	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.0000122	-	1	ng/m ³	Population	Below limit value	

Table 4.2.120 Comparison between maximum concentrations and limit values for Ignatesti - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
14	NO ₂	1 hour	15.1570	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.3922	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0979	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0252	-	125	µg/m ³	Population	Below limit value
		1 year	0.0037	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	13.316	350	500	µg/m ³	Population	Below alert threshold and limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		24 hours	0.728	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.071	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.026	-	50	µg/m ³	Population	Below limit value
		1 year	0.018	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	2.91855	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00032	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00221	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00142	-	-	ng/m ³	-	-
	Benz(a)pyrene	1 year	0.0000142	-	1	ng/m ³	Population	Below limit value

Table 4.2.121 Comparison between maximum concentrations and limit values for Petreni - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
960	NO ₂	1 hour	0.6086	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0074	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0038	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0009	-	125	µg/m ³	Population	Below limit value
		1 year	0.0001	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	2.984	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.214	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.019	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.008	-	50	µg/m ³	Population	Below limit value
		1 year	0.004	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	0.57489	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00001	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00004	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.0007	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.000007	-	1	ng/m ³	Population	Below limit value	

Table 4.2.122 Comparison between maximum concentrations and limit values for Tarina - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
0	NO ₂	1 hour	0.6003	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0169	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0040	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0010	-	125	µg/m ³	Population	Below limit value
		1 year	0.0001	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	2.716	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.205	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.046	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.020	-	50	µg/m ³	Population	Below limit value
		1 year	0.010	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	0.36243	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00001	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00008	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00145	-	-	ng/m ³	-	-
Benz(a)pyrene	1 year	0.0000145	-	1	ng/m ³	Population	Below limit value	

Table 4.2.123 Comparison between maximum concentrations and limit values for Vartop - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
903	NO ₂	1 hour	6.1409	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0588	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0327	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0050	-	125	µg/m ³	Population	Below limit value
		1 year	0.0005	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	7.357	350	500	µg/m ³	Population	Below alert threshold and limit value

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
		24 hours	0.309	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.040	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.017	-	50	µg/m ³	Population	Below limit value
		1 year	0.009	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	1.26266	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00005	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00032	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00095	-	-	ng/m ³	-	-
	Benz(a)pyrene	1 year	0.0000095	-	1	ng/m ³	Population	Below limit value

Table 4.2.124 Comparison between maximum concentrations and limit values for the Rosia Montana Protected Zone - Closure Phase

Distance to source	Pollutant	Averaging period	Maximum concentration - project	Alert threshold	Limit values (LV) / Target values	Measurement Unit	Receptor corresp. to the limit value	Comments
0	NO ₂	1 hour	3.2594	400	200	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.0350	-	40	µg/m ³	Population	Below limit value
	SO ₂	1 hour	0.0161	500	350	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.0031	-	125	µg/m ³	Population	Below limit value
		1 year	0.0003	-	20	µg/m ³	Ecosystems	Below limit value
	TSP	30 min	4.360	350	500	µg/m ³	Population	Below alert threshold and limit value
		24 hours	0.372	105	150	µg/m ³	Population	Below alert threshold and limit value
		1 year	0.083	52.5	75	µg/m ³	Population	Below alert threshold and limit value
	PM ₁₀	24 hours	0.029	-	50	µg/m ³	Population	Below limit value
		1 year	0.018	-	40	µg/m ³	Population	Below limit value
	CO	8 hours	0.55584	-	10.000	µg/m ³	Population	Below limit value
	Cd	1 year	0.00003	-	5	ng/m ³	Population	Below limit value
	Ni	1 year	0.00018	-	20	ng/m ³	Population	Below limit value
	PAH, of which:	1 year	0.00247	-	-	ng/m ³	-	-
	Benz(a)pyrene	1 year	0.0000247	-	1	ng/m ³	Population	Below limit value

Cancer risk assessment

The assessment of cancer risk due to the Project activities was conducted for the 15 communities located in the vicinity of the mining site. The maximum values of the annual average concentrations are summarized for each locality and year in **Tables 4.88 – 4.2.102**. As shown in the tables, the maximum concentrations annual weighted averages are foreseen to occur in the Rosia Montana Protected Zone.

It should be noted that the existing emission factors used for the heavily chromium and polycyclic aromatic hydrocarbon (PAH) emission estimation refer to the total chromium and sum of the PAH compounds, respectively specific for the activities under consideration. On the other hand, the risk units are based on the carcinogen effects of hexavalent chromium and benz(a)pyrene, respectively. It is estimated that 5% of the total chromium present in fuels is converted to hexavalent state following combustion. As per the structure of PAH released by internal combustion engines, the benz(a)pyrene concentration is below 1% of total PAH. For the purposes of this study, benz(a)pyrene concentration was considered 1% of total PAH. It should be noted that the cancer risk units defined by the World Health Organisation represent the risk of contracting this disease in case of human exposure during the entire life (considered 70 years) at an average concentration of the respective contaminant of $1 \mu\text{g}/\text{m}^3$. The correction factor regarding the exposure was estimated as the ratio between the maximum exposure time of the population to the pollution generated by the Project activities (considered 20 years) and exposure time for which the risk units were defined.

Tables 4.2.125 – 4.2.139 show the long-term concentration modeling for hexavalent chromium, arsenic, nickel, cadmium and PAH [as benz(a)pyrene]. The comparison with the limit values indicates that in general the modeled values are much lower than the limit.

Table 4.2.140 summarizes the assessment of the maximum risk for population exposure to the maximum concentrations foreseen for the Rosia Montana Protected Zone. The estimations regarding the maximum cancer risk are of 0.75×10^{-6} , which is less than 1 to 1 million. In general, the accepted practices indicate that the 10 to million risk is negligible.

It should be noted that the maximum foreseen cancer risk due to the Project activities is much lower than this negligible level.

Table 4.2.125 Carcinogenic compounds annual average concentrations - Abrud

Pollutant	Modeled Concentrations - ng/m^3						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m^3	ng/m^3
Hexavalent Chromium	0.000104	0.0265	0.025	0.032	0.027	0.000006	0.024655	-
Arsenic	0	0.01	0.01	0.01	0.01	0	0.009000	6
Nickel	0.00066	0.74	0.7	0.9	0.76	0.00017	0.691042	20
Cadmium	0.0001	0.11	0.1	0.13	0.11	0.00002	0.101006	5
PAH as Benz(a)pyrene	0.00190	0.00010	0.00010	0.00020	0.00020	0.00002	0.000226	1

Table 4.2.126 Carcinogenic compounds annual average concentrations - Bisericani

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.00013	0.052	0.0255	0.0295	0.02	0.000002	0.032782	-
Arsenic	0	0	0	0	0	0	0.000000	6
Nickel	0.00074	1.45	0.72	0.82	0.56	0.00005	0.915040	20
Cadmium	0.00011	0.21	0.1	0.12	0.08	0.00001	0.132006	5
PAH as Benz(a)pyrene	0.00170	0.00020	0.00020	0.00020	0.00020	0.00001	0.000265	1

Table 4.2.127 Carcinogenic compounds annual average concentrations – Bucium Village

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000125	0.0255	0.0235	0.0295	0.0235	0.000006	0.022857	-
Arsenic	0	0	0	0	0	0	0.000000	6
Nickel	0.00063	0.71	0.65	0.83	0.65	0.00017	0.636040	20
Cadmium	0.00009	0.1	0.09	0.12	0.09	0.00002	0.089506	5
PAH as Benz(a)pyrene	0.00210	0.00020	0.00010	0.00020	0.00020	0.00004	0.000277	1

Table 4.2.128 Carcinogenic compounds annual average concentrations – Coasta Hentii

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.00012	0.0375	0.04	0.0475	0.039	0.000016	0.035882	-
Arsenic	0	0.01	0.01	0.01	0.01	0	0.009000	6
Nickel	0.00084	1.05	1.12	1.33	1.09	0.00043	1.004064	20
Cadmium	0.00012	0.15	0.16	0.19	0.16	0.00006	0.144509	5
PAH as Benz(a)pyrene	0.00180	0.00020	0.00020	0.00020	0.00020	0.00001	0.000271	1

Table 4.2.129 Carcinogenic compounds annual average concentrations - Dogaresti

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000078	0.0255	0.0245	0.0315	0.023	0.000003	0.023129	-
Arsenic	0	0	0	0	0	0	0.000000	6
Nickel	0.00057	0.71	0.68	0.88	0.65	0.00008	0.646533	20
Cadmium	0.00008	0.1	0.1	0.13	0.09	0.00001	0.092005	5
PAH as Benz(a)pyrene	0.00120	0.00010	0.00010	0.00020	0.00010	0.00001	0.000166	1

Table 4.2.130 Carcinogenic compounds annual average concentrations - Floresti

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000266	0.064	0.026	0.025	0.0165	0.000002	0.036088	-
Arsenic	0	0	0	0	0	0	0.000000	6
Nickel	0.00084	1.79	0.72	0.7	0.46	0.00005	1.008045	20
Cadmium	0.00013	0.26	0.1	0.1	0.07	0.00001	0.146507	5
PAH as Benz(a)pyrene	0.00280	0.00040	0.00030	0.00020	0.00020	0.00001	0.000411	1

Table 4.2.131 Carcinogenic compounds annual average concentrations - Garda Barbulesti

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000053	0.0205	0.018	0.0235	0.013	0.000003	0.016778	-
Arsenic	0	0	0	0	0	0	0.000000	6
Nickel	0.00038	0.57	0.51	0.65	0.37	0.00008	0.469023	20
Cadmium	0.00006	0.08	0.07	0.09	0.05	0.00001	0.065004	5
PAH as Benz(a)pyrene	0.00090	0.00010	0.00010	0.00010	0.00010	0.000004	0.000135	1

Table 4.2.132 Carcinogenic compounds annual average concentrations - Gura Rosie

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000739	0.01	0.01	0.013	0.01	0.000486	0.009511	-
Arsenic	0	0	0	0	0	0	0.000000	6
Nickel	0.00062	0.27	0.28	0.36	0.28	0.01365	0.260714	20
Cadmium	0.00011	0.04	0.04	0.05	0.04	0.00194	0.037603	5
PAH as Benz(a)pyrene	0.00610	0.00000	0.00000	0.00010	0.00010	0.00001	0.000345	1

Table 4.2.133 Carcinogenic compounds annual average concentrations - Helesti

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000163	0.054	0.0305	0.034	0.0315	0.000002	0.037633	-
Arsenic	0	0	0	0	0	0	0.000000	6
Nickel	0.00118	1.51	0.85	0.95	0.88	0.00005	1.051562	20
Cadmium	0.00017	0.22	0.12	0.14	0.13	0.00001	0.153509	5
PAH as Benz(a)pyrene	0.00180	0.00040	0.00030	0.00070	0.00080	0.00001	0.000586	1

Table 4.2.134 Carcinogenic compounds annual average concentrations - Iacobesti

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000174	0.0155	0.0165	0.022	0.0165	0.000087	0.015288	-
Arsenic	0	0	0	0	0	0	0.000000	6
Nickel	0.00039	0.44	0.46	0.62	0.46	0.00244	0.430142	20
Cadmium	0.00006	0.06	0.07	0.09	0.07	0.00035	0.062021	5
PAH as Benz(a)pyrene	0.00200	0.00010	0.00010	0.00010	0.00010	0.00001	0.000191	1

Table 4.2.135 Carcinogenic compounds annual average concentrations - Ignatesti

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000175	0.02	0.021	0.028	0.021	0.000079	0.019563	-
Arsenic	0	0.01	0.01	0.01	0.01	0	0.009000	6
Nickel	0.00048	0.55	0.59	0.79	0.59	0.00221	0.545135	20
Cadmium	0.00007	0.08	0.08	0.11	0.08	0.00032	0.076520	5
PAH as Benz(a)pyrene	0.00220	0.00010	0.00010	0.00010	0.00010	0.00001	0.000201	1

Table 4.2.136 Carcinogenic compounds annual average concentrations - Petreni

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000086	0.0325	0.0195	0.0235	0.016	0.000002	0.022479	-
Arsenic	0	0	0	0	0	0	0.000000	6
Nickel	0.00052	0.91	0.55	0.66	0.45	0.00004	0.630528	20
Cadmium	0.00008	0.13	0.08	0.09	0.06	0.00001	0.088505	5
PAH as Benz(a)pyrene	0.00130	0.00020	0.00010	0.00020	0.00020	0.00001	0.000235	1

Table 4.2.137 Carcinogenic compounds annual average concentrations - Tarina

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000158	0.086	0.1065	0.209	0.058	0.000003	0.090908	-
Arsenic	0	0.01	0.01	0.01	0.01	0	0.009000	6
Nickel	0.00128	2.4	2.98	5.85	1.62	0.00008	2.540568	20
Cadmium	0.00019	0.34	0.43	0.84	0.23	0.00001	0.362510	5
PAH as Benz(a)pyrene	0.00260	0.00030	0.00030	0.00050	0.00050	0.00001	0.000481	1

Table 4.2.138 Carcinogenic compounds annual average concentrations - Vartop

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000116	0.039	0.038	0.0445	0.0395	0.000012	0.035956	-
Arsenic	0	0.01	0.01	0.01	0.01	0	0.009000	6
Nickel	0.00105	1.09	1.06	1.25	1.1	0.00032	1.004569	20
Cadmium	0.00015	0.16	0.15	0.18	0.16	0.00005	0.146010	5
PAH as Benz(a)pyrene	0.00170	0.00010	0.00010	0.00020	0.00020	0.00001	0.000215	1

Table 4.2.139 Carcinogenic compounds annual average concentrations - Rosia Montana Protected Zone

Pollutant	Modeled Concentrations - ng/m ³						Weighted mean	Target values
	Construction	Year 9	Year 10	Year 12	Year 14	Closure Phase	ng/m ³	ng/m ³
Hexavalent Chromium	0.000468	0.238	0.2335	0.276	0.1435	0.00001	0.195849	-
Arsenic	0	0.01	0.01	0.01	0.01	0	0.009000	6
Nickel	0.0041	6.66	6.54	7.73	4.02	0.00018	5.482714	20
Cadmium	0.0006	0.95	0.93	1.1	0.57	0.00003	0.780532	5
PAH as Benz(a)pyrene	0.00450	0.00060	0.00050	0.00120	0.00130	0.00002	0.001021	1

Table 4.2.140 Maximum Cancer Risk Estimations - Rosia Montana Protected Zone

Pollutant	Weighted Mean Concentration (ng/m ³)	Pollutant Correction Factor	Exposure Correction Factor	Unit Risk Factor (µg/m ³) ⁻¹	Cancer Risk (risk x 10 ⁶)
Hexavalent Chromium	0.195849	0.05	0.286	4.00E-02	1.12E-01
Arsenic	0.009000	0.60	0.286	4.30E-03	6.64E-03
Nickel	5.482714	1.00	0.286	4.00E-04	6.27E-01
Cadmium	0.780532	0.50	0.286		0.00E+00
PAH as Benz(a)pyrene	0.001021	0.10	0.286	8.70E-02	2.54E-03
Total Risk	-	-	-	-	7.48E-01