

## Bosnia Herzegovina: SSL EHS Action Plan – Progress 2007-2010

Ref.	Proposed Actions	Priority
<b>1</b>	<b>Environment Permit Action Plan</b>	
	<p>□ Prepare and submit Action Plan required as part of Environmental Permit pre-application activities. Priprema i predavljanje akcionog plana kao dijela potrebnog za Ekološku dozvolu - aplikacijske aktivnosti.</p> <p><b>According to 'Law on Environment Protection' (Zakon o zaštiti okoliša (sl.novine FBiH,broj 33/03)), Action Plan (Plan Aktivnosti) has been prepared by Dvokut Pro d.o.o. Sarajevo and submitted to Federal Ministry of Environment and Tourism in 31.08.2007. (Protocol no.2579/07).</b></p> <p><b>Environmental permit obtained 04.03.2010 and valid for five years(no: UP-I-05-23-38-7/06-DD )</b></p>	High
<b>2</b>	<b>Water Permit Application</b>	
	<p>□ Implement programme to meet outstanding Water Permit conditions to enable temporary water quality permit to be obtained. This includes the preparation of the following studies/documentation:</p> <p><b>SSL has Water Permit valid through 1.12.2009 (rješenje br.UP-1-25-40-221-5/08)</b></p> <p><b>For dense ash production plant, Water Permit is valid through 5.12.2009. (rješenje br.UP-1-25-40-221-6/08)</b></p> <p><b>SSL send a new request for the extension of water permit(no: 4398/09 dated 17.11.2009) to the agency „Agenciji za vodno područje rijeke Save” Sarajevo</b></p> <p><b>New water permit obtained 18.03.2010 and valid until 20.08.2012 (no: UP-I/25-3-40-458-5/09)</b></p> <p><b>With water permit SSL have a obligation to realised projects given in permit up to 2010 including continuous quality monitoring of waste water</b></p>	High
	<p>1 Study on qualitative and quantitative water balance (including water, wastewater, sludge and other waterborne waste material), under preparation by the Institute of Public Health (IPH), Sarajevo;</p> <p><b>Water balance has been studied in January 2007. (BILANS voda, tereta zagađenja otpadnih voda, te otpadnih materija tvornice 'Sisecam Soda Lukavac', Januar 2007)</b></p>	

<p>2 Design of wastewater treatment units for wastewater collected by main industrial wastewater collector (including wastewater from Thermal Power Plant and from “Black Sea” tailing pond), and for treatment of seepage wastewater from “White Sea” tailing pond (treatment to be in compliance with existing regulation, in terms of EU standards and with the maximum recirculation of water);</p> <p>Autorized company, INZIO in 10.th of January 2010., made a revision of main project for neutralization of overflow White see. According to project all waste water inside of site it will be collected in collector, and from that point it will be transported to the settling pond no.3 of White see. Overflow from settling pond no-3 will be treated in neutralization unit and send to settling pond no.4 for additional treatment (decanting). Clear part of that overflow will be discharge to Spreca river, and measuring parameters will be according to a Bosnian regulation. With neutralization system we will reduce a pH and total suspended solids in clear part of overflow discharge into river Spreca.</p> <p>Problem of sanitary and rain waste water will be solved with these projects.</p>	
<p>3 Completion of technical documentation of oily wastewater treatment installations (from service workshop, heavy heating oil pump station, oily storm water and others);</p> <p>'Regulation for storage and disposal/treatment of waste oil' has been prepared (Uputstvo za pravilno uskladištenje i zbrinjavanje rabljenog ulja i maziva) For the time being, it has been stored in the plant site. To contact with authorized companies for its disposal is in progress.</p> <p>Hazardous waste storage has been built inside the SSL factory and also we have signed contract with certified companies for waste disposal. Waste water contaminated with oils will be treated in oil separators (Project will be realised by 2012).</p>	
<p>4 Design documentation of water supply and sewerage installations (according to wastewater treatment units' demands);</p> <p>Preparation of design documentation for waste water channels are in progress. This study is being conducted by Javno Preduzeće Za Vodoprivrednu Djelatnost D.D. Spreča, Tuzla. After this study, rain water, sewage water and process waste water channels are going to be separated and are going to be treated individually.</p> <p>Rain and sanitary water treatment project specification had been made by certified institution "Javno preduzeće za Vodoprivrednu djelatnost „Spreča” D.D. Tuzla", number: 05/1-569-1/09, January 2010.</p> <p>For the time being we are in process of preparing main project documentation so we could start with the realisation which should, according to Integrated action plan, be completed by 2012.</p>	

	<p>5 Study of the qualitative and quantitative characteristics of wastewater discharge including determination of pollution degree by Population Equivalent, performed by an authorized institute;  <b>This study has been prepared by the Institute of Public Health (IPH), Sarajevo in November 2006 and March 2008. (Izveštaj o rezultatima ispitivanja tereta zagađenja otpadnih voda, izraženog preko ekvivalentnog broja stanovnika-EBS-a za fabriku SSL, br.protokola:03-162/08)</b>  Cooling tower commissioning significantly reduced EBS.Measuring done in August 2009, by authorized company,Dvokut Pro .Company submit a report (Izveštaj o rezultatima ispitivanja tereta zagađenja otpadnih voda, izraženog preko ekvivalentnog broja stanovnika-EBS-a za SSL, broj: IV-183-A7/09).</p> <p>6 Preparation of documentation on permanent solutions for solid waste and sludge;  <b>SinceApril 2007, solid waste from lime kilns are being sieved and fines are sent to ball mill for grinding overburned material. Coarse particles (&gt;25 mm) are sent back to lime kilns. This operation is carried out for the recovery of the whole solid waste from kilns.</b>  <b>SinceAugust 2008, wasted product emitted from the driers and transporters are now regularly collected and used as reactive agent for purification of brine. It is a typical waste recovery and cost effective process in operation.</b>  <b>New belt conveyer for coarse solid waste transportation back to process.</b></p> <p>7 Preparation of documentation on the installation of a monitoring system for continuous measurements of water intake (quantity and quantity) and wastewater discharge quality;  <b>Water intake from Modrac Lake is analyzed in plant laboratory, and daily flowrate is recorded and submitted to Sava River Area Water Agency on monthly basis. Waste water discharge quality is analyzed by plant laboratory and authorized laboratory (Institute za hemijsko inženjerstvo Tuzla) on monthly basis.</b>  <b>For 2010, SSL have a contract with Dvokut Pro.Sarajevo for monthly monitoring of waste water .</b></p> <p>8 Preparation of a study that will provide an integrated solution for water, soil and air protection and management of SSL operations;</p> <p>9 Geotechnical analysis of “White Sea” tailing pond outer embankment stability for each impoundment  Geotehnička analiza stabilnosti taložnice Bijelog mora  <b>This has been studied by Tuzla University Faculty of Mining, Geology and Civil Engineering. (Elaborat o Ispitivanju Stabilnosti Vanjskih Nasipa Bijelo More, 04/01/2008)</b></p> <p>10 Programme for the maintenance, utilization and monitoring of water management facilities, according to BiH regulations, and Water Management Expert Opinion on the Programme (according to the Law on Water, Official Gazette FBiH no. 18/98).</p>	
--	---	--

3	<b>Water Quality Monitoring-Monitoring otpadnih voda</b>	
	<p> <input type="checkbox"/> Based on study mentioned above (Ref. 1) extend existing water discharge monitoring programme to include a wider range of environmental parameters (integrating the results of the IPH study).  <b>According to the monitoring programme for waste water, in laboratory, defined environmental parameters have been started to be monitored regularly. Industrial water from Lake Modrac, waste water from internal channels (K2, K3, K4, K5) and black sea overflow are being analyzed daily. In addition to these, white sea overflow is being analyzed for determination of Pa, Ma, pH, suspended solid materials, Cl<sup>-</sup>, Ca<sup>2+</sup>, Na<sup>+</sup> and NH<sub>4</sub><sup>+</sup>. See attached scheme for sampling places.</b>  <b>SSL laboratory is taking sample(daily) form two discharge points into Spreca river (E1 and E2 profile).</b> </p> <p> <input type="checkbox"/> Implement programme of ongoing independent monitoring of upstream and downstream water quality.  <b>Waste water is being analyzed before discharge point and after discharge point with the samples being taken from the river. Parameters being analyzed are; Pa, Ma, pH, suspended solid materials, Cl<sup>-</sup>, NH<sub>4</sub><sup>+</sup>, hardness ve oil.</b>  <b>Monitoring of Spreca river is follow in two control –sampling point (E1 and E2):before and after discharging waste water into river Spreca</b> </p> <p> <input type="checkbox"/> Purchase new monitoring and laboratory equipment, maintain and calibrate in accordance with the manufacturers instructions.  <b>New laboratory equipments have been bought and started to being used. These are spektrophotometer, moisture analyzer, vacuum filtration set-up for determining suspended solid materials, colorimeter, pHmeter, conductivity meter and titrator.</b> </p>	High
4	<b>Environment Permit Application</b>	
	<p> <input type="checkbox"/> Implement programme to meet outstanding Environment Permit application conditions. This includes the preparation of the following studies and documentation:  <b>According to FBiH 'Law on Environment Protection', to be able to apply for environment permit, it is required to prepare 'Action Plan'. This plan has been prepared by Dvokut Pro d.o.o. Sarajevo and submitted to ministry in 31.08.2007. After necessary study being done by a commision nominated by federal goverment, an assessment audit are going to be conducted in 15.05.2009.</b>  <b>SSL prepare a Plan for waste monitoring , and plan is in accordinace with Law of enviroment protetction(Offical gazete FBiH, no.33/03), Law of waste monitoring (offical gazete no.33/03) and regulation of selcetiv disposal i and waste marking (offical gazete FBiH,no.38/06).Plan for waste monitoring is done in cooperation with Dvokut Pro Sarajevo(plan is a part with enviroment permit).</b>  <b>Activity plan is approved,on 22.October 2009. by Government .</b>  <b>Environmental permit obtained 04.03.2010 and valid for five years(no: UP-I-05-23-38-7/06-DD )</b> </p>	

1	Basic permitting information (see details in regulations);	
2	Complete environmental baseline study to establish site setting and sensitivities; complete assessment of existing contamination at the site and potential emissions sources (including air, noise, waste, water); prepare illustrative figures for emissions sources; verify data from registered BiH institute;	
3	Prepare inventory of main raw materials and other materials including chemical substances and fuels (name of raw material, annual consumption, consumption per product unit, total annual consumption, description of components or characteristics with important environmental effects, supply method, storing and transfer);	
4	Identify water supply source, total water consumption and consumption per product unit, energy sources, total consumption and consumption per product unit;	
5	Prepare inventory of equipment for maintenance and cleaning;	
6	Describe existing monitoring regime (location, parameters, frequency and reporting);	
7	Describe existing measures for the prevention of emissions, description of existing measures for the reduction of raw material, water and energy, description of the final treatment of waste streams (treatment and final destination) and their comparison with those given in BAT documents;	
8	Analysis of data on raw material consumption and emissions in accordance with regulations regarding emissions limit values and recommendations provided in BAT document;	
9	List of activities and measures for emissions reduction from installations and facilities and rationalization of raw material and natural resources consumption (water and energy) in accordance with BAT and terms for implementation of planned activities and measures;	
10	Proposal of monitoring plan according to regulation and terms for implementation of planned activities and measures;	
11	Measures planned for monitoring of production, and generation of waste and emissions;	
12	Plan for prevention of large scale accidents and terms for implementation of planned activities and measures, persons responsible according to Regulation on content of the Report on safety condition, content of information on security measures and content of internal and external intervention plans;	
13	Prepare method of progress reporting;	

	14 Annual financial assessment for plan implementation;	
	15 Plan for operation termination, i.e. if plant stops with operation before 31 December 2007;	
	16 Annex – include excerpt from spatial planning documentation, copy of all permits, copy of existing reports (environmental protection, fire protection, health and safety); and	
	17 Prepare a waste management plan as prescribed by Regulation on content of compliance plan, waste management for existing installations for waste treatment and disposal and activities that undertake competent authority (Official Gazette FBiH 9/05). SSL prepare a Plan for waste monitoring , and plan is in accordance with Law of environment protection(Official gazete FBiH, no.33/03), Law of waste monitoring (official gazete no.33/03) and regulation of selective disposal and waste marking (official gazete FBiH,no.38/06).Plan for waste monitoring is done in cooperation with Dvokut Pro Sarajevo(plan is a part with environment permit). Plan contains: <ul style="list-style-type: none"> <li>- category waste lists, with a composition of waste,waste origin,quantity, way of transportation and final disposal point.</li> <li>- Systems procedure regarding category and waste management ,and instruction for disposal and separation of waste ( hazardous and nonhazardous)</li> </ul>	
<b>5</b>	<b>Environmental Upgrade Programme</b>	High
	<input type="checkbox"/> Implement programme to identify and monitor preparation of all necessary studies and plans for the preparation of the Environmental Permit (in line with the above-stated requirements).  <input type="checkbox"/> Integrate all likely permit conditions and “best practice” into environmental design criteria for facility upgrade plans. This is likely to include:	

	<p>1 Water recirculation within the Facility; <b>circulation in the plant has been provided by cooling towers. Towers started to be operated in 14.04.2009.</b></p> <p>2 Wastewater treatment for general industrial waste water and cooling water;  <b>Water wasted from production facilities are collected and transported to white sea to split process water and rain water.</b></p> <p>Cooling water from process is sent back to recirculation towers.  White sea settling ponds overflow will be treated in neutralisation process and after it goes again to decanters. In this way we will decrease pH and suspended material values.  We have completed documentation for rain and sanitary water treatment and it has been done by certified company Javno preduzeće za Vodoprivrednu djelatnost „Spreča” D.D. Tuzla, broj: 05/1-569-1/09, January 2010.  Main project documentation preparation is in progress in order to start realisation. In this way rain and sanitary water will be treated in oil separators.  Project realisation is scheduled for 2012.</p> <p>3 Wastewater treatment system for Black Sea tailings pond;</p> <p>Sludge and electric recipients ash transportation to Black Sea is performed using hydraulic method.  Water used for this is water from lime kilns gas washers with pH value of 6. In this way we are also decreasing pH value of Black sea settling pond overflow.</p> <p>4 Atmospheric emissions monitoring and control;  <b>Boiler stack gas and dust from production process have been measured by Dvokut Pro Laboratories in January 2009. (Izveštaj o mjeranju emisije u zrak polutanata u dimnim gasovima iz postrojenja SSL, Izveštaj broj: IE-002-P1/09)</b>  Boiler stack gases concentration and dust emission measurements have been made by Dvokut Laboratory in January 2010 (Izveštaj o mjeranju emisije u zrak polutanata u dimnim plinovima iz postrojenja za SSL, Izveštaj broj: IE-005-B2/10)</p>	
--	--	--

	<p>5 Fugitive emissions monitoring and control; and Monitoring i kontrola propusne emisije  <b>Fugitive steam leakages from pipes and fittings in power plant have been reduced. Dust emission points on boiler bodies was repaired.</b></p> <p>6 Improved materials handling and storage.  <b>New ammonium storage tank had been installed (capacity of 100 tons)</b>  <b>New storage vessels for HCl and NaOH had been installed for water treatment unit requirements</b>  <b>New final product storage area with automatic packing and palletizing units</b></p>	
	<p><input type="checkbox"/> Review business plan for NewCo and facility upgrade plans for NewCo and ensure that BAT (as defined by BiH law and the appropriate EU BREF) is integrated into plans and designs such that all new facilities will be BAT compliant.</p>	
	<p><input type="checkbox"/> Preparation of overall environmental impact assessment for the upgrade facility including environmental baseline assessment, impact assessment and management and mitigation plans (in accordance with IFC requirements).</p>	
	<p><input type="checkbox"/> Review existing facilities and integrate proposals into facility upgrade plans to ensure that all appropriate and remaining existing facilities will be BAT compliant.</p>	
<b>6</b>	<b>Occupational Health &amp; Safety Permit</b>	
	<p><input type="checkbox"/> Prepare 2006 Health &amp; Safety Report (for the 4 months of NewCo operations).  <b>Health &amp; Safety Report (O stanju zaštite na radu i sigurnosti u SSL-u) is being prepared yearly at the end of year. (For years 2006,2007,2008, it has been prepared.)</b>  <b>Report regarding general state of occupational health and safety in SSL for 2009 has been made and it clearly indicates there is significant improvement and all planned activities has been realised.</b></p>	



	<p><input type="checkbox"/> Prepare 2007 health &amp; safety programme for NewCo.</p> <p><b>Health &amp; Safety Programme (Program mjera zaštite na radu za 2008.god.) is being prepared at the end of each year for the coming year.</b></p> <p><b>According to 'Law on Occupational Safety' (Zakona o Zaštiti na radu (Sl.novine SR BIH,broj 22/90)), 'Regulation on Safety at work in SSL d.o.o' (Pravilnik o zaštiti na radu Sisecam Soda Lukavac d.o.o.</b></p> <p><b>We have completed "Programme for occupational safety" for 2009 and 2010 and its realisation is being closely monitored. In january 2010, according to Occupational safety law article 1 and 6 ( Službene novine SR BIH, broj 22/90), General manager of SSL signed "Pravilnik o zaštiti na radu Sisecam Soda Lukavac" d.o.o. Lukavac</b></p>	High
<b>7</b>	<b>Occupational Health &amp; Safety Management Programme</b>	
	<p><input type="checkbox"/> Undertake detailed occupational health and safety audit and review of individual workstations (noise, dust, ammonia, CO, etc).</p> <p><b>In various places of the plant (179 points), workplace environment measurements (temperature, humidity, illumination, dust, gas, noise) have been done by an authorized institute (Inproz, Tuzla) in in November 2008. (Elaborat o komforu radne sredine (fizičko-hemijski izvori štetnosti i mikroklimatski uslovi))</b></p>	High
	<p><input type="checkbox"/> Prepare and implement Health &amp; Safety Management Plan in accordance with OHSAS 18000, with a view to eventual certification.</p>	
	<p><input type="checkbox"/> Prepare and implement health &amp; safety training for all workers in accordance with the health and safety programme and the Health &amp; Safety Management Plan.</p> <p><b>It is prepared in yearly Health &amp; Safety Report.</b></p> <p><b>According to education plan we have completed education of all employees for Occupational Health and Safety.</b></p>	
	<p><input type="checkbox"/> Timetable and plan for introduction of OHSAS 180001 (or similar).</p> <p><b>It is planned to implement works for certification of OHSAS 180001 in 2010.</b></p>	

	<input type="checkbox"/> Provision of personal protective equipment (PPE). <b>PPA (suitable to workplaces) for all workers is planned by yearly OHS plan and distributed accordingly.</b>	
<b>8</b>	<b>Air Monitoring</b>	
	<input type="checkbox"/> Extend existing air emissions monitoring programme to include a wider range of environmental parameters (twice yearly).	
	<input type="checkbox"/> Implement automated control programme for boiler system management and emissions control (included in capex figures for facility upgrade at \$500,000). <b>Automation system for boilers has been completed.</b> <b>Installation of O2 analyzers increased boiler efficiency. Activities for further improvement of boiler operation are in progress</b>	
	<input type="checkbox"/> Implemented periodic independent monitoring of ambient air quality at site boundaries (twice yearly). <b>Measuring of air quality have been done by Dvokut Pro Laboratories in January 2009 and January 2010. (Izveštaj o mjeranju emisije u zrak polutanata u dimnim gasovima iz postrojenja i kvalitet zraka za SSL, Izveštaj broj: IE-002-P1/09 i broj: IE-005-B2/10)</b>	High
	<input type="checkbox"/> Implement periodic monitoring of air emissions from all significant emission sources at the site by independent authorized institute (twice yearly). <b>Air emissions from boiler stack and from process have been measured by Dvokut Pro in September 2008.</b> <b>Boiler smoke gases concentration and air pollution emission in SSL has been made by Dvokut laboratory in january 2009 and january 2010 (Izveštaj o mjeranju emisije u zrak polutanata u dimnim plinovima iz postrojenja SSL, Izveštaj broj: IE-002-P1/09 i broj: IE-005-B2/10).</b>	
<b>9</b>	<b>Fly Ash Disposal – Black Sea</b>	
	<input type="checkbox"/> Examine options to utilise fly ash in neighbouring cement factory as an alternative to disposal in the “Black Sea”. <b>A mutual study has been conducted with cement factory. It is in progress.</b> <b>Negotiations between FCL and SSL regarding possibility of using electric precipitor ash for cement production are in progress. We are in process of decreaseing combustive material to less than 2% as it is demanded by FCL</b>	Medium
	<b>Waste Management – White Sea Tailings Ponds</b>	
	<input type="checkbox"/> Prepare a plan for wastewater treatment system at the White Sea tailings pond considering local conditions and technical constraints and developments at the plant. <b>Realisation of white sea neutralisation project will decrease suspended material and pH values of overflow to river Spreča</b>	
<b>10</b>	<input type="checkbox"/> Prepare long-term operational management, closure and rehabilitation plan for the “White Sea”. <b>In 2011 white sea settling ponds 3 and 4 are scheduled to be increased in its capacity while ponds 1 and 2 should be emptied. Also, there are plans to check if it is possible to use white and black seas sludge for roads and mine area recultivations.</b>	Medium

	<input type="checkbox"/> Prepare long-term operational management and closure and rehabilitation plan for the “Black Sea”.	
<b>11</b>	<b>Adoption of EHS Best Practice</b>	
	<input type="checkbox"/> Revise current on site EHS organization to properly manage audit recommendations and implement Action Plan including development of EHS policy and training.	
	<input type="checkbox"/> Maintain a regulatory register outlining the requirements of all applicable Bosnia & Herzegovina environment and health & safety legislation and assessing the compliance of the business with applicable legislation.	
	<input type="checkbox"/> Track and monitor compliance against IFC Performance Standards.	
	<input type="checkbox"/> Prepare and implement Environmental Management System with a view to eventual certification including revised organisational structure and reporting lines per IFC requirements included in PS1.	Medium
	<input type="checkbox"/> Prepare Emergency Response Plan, and implement system for Incident and Accident Reporting including personnel and responsibilities.	
	<input type="checkbox"/> Review HR and Recruitment Policy with emphasis on local employment and skills training per IFC Requirements included in PS2	
	<input type="checkbox"/> Conduct annual audit of implementation of Action Plan and budget utilized and report to IFC.	
<b>12</b>	<b>Community Engagement Programme</b>	
	<input type="checkbox"/> Dissemination of soda ash production EU BREF documents to Bosnian language, and distribution of the documents to technical management team, design bureau and Federal and Cantonal authorities. <b>EU BREF document has been translated to Bosnian language and distributed to related people.</b>	Medium
	<input type="checkbox"/> Development of public relations plan in line with IFC requirements included in PS1, 2 and 4.	
	<input type="checkbox"/> Preparation of information/promotional material to be distributed to key stakeholders.	

	<input type="checkbox"/> Preparation of SSL web-site. <b>SSL web-site has been published by the address <a href="http://www.sisecam.ba">www.sisecam.ba</a></b>	
	<input type="checkbox"/> Initiate adequate staffing and training of staff for proper and regular interaction with all stakeholders.	
<b>13</b>	<b>Staff Training</b>	
	<input type="checkbox"/> Preparation of training materials.	Medium
	<input type="checkbox"/> Undertaking general EHS awareness training courses for all workers.	
	<input type="checkbox"/> Specific training courses for specific workers in key areas.	
	<input type="checkbox"/> Specific training courses for EHS staff.	
<b>14</b>	<b>Liability Management</b>	
	<input type="checkbox"/> Undertake environmental baseline studies of key areas of the site.	Medium
	<input type="checkbox"/> Prepare an Environmental Baseline Report to act as a reference point.	
	<input type="checkbox"/> Review upstream suppliers EHS practices and footprint, and proposed new brine pipeline.	
<b>15</b>	<b>Finalize key environmental conditions within the Joint-Venture Agreement and IFC Performance Standards</b>	
	<input type="checkbox"/> Develop and implement technology to maximise the recirculation of water within the plant, minimising liquid effluent discharges. <b>Water consumption parameter reduced from 100 m3/ ton to 50 m3/ton soda ash. It is planned to reduce it to 30 m3 by the implementation of the works for water collection system in the plant. It will be realised in a few months.</b>	Medium
	<input type="checkbox"/> Control effluent discharges from the “White Sea” tailings pond, focusing on neutralising effluent pH. <b>Monitoring action is in progress by the analysis of critical points.</b>	
	<input type="checkbox"/> Transfer EHS know-how from Sisecam to NewCo.	

# ŠEMA UZORKOVANJA OTPADNIH VODA U SSL

