

Environmental Action Plan, Carvajal Companies

April 16, 2004

Item	Description	Completion Date
1	Undertake a comprehensive environmental, health and safety audit of Propal's Yumbo and Caloto manufacturing sites. As a result of the audit, develop a timed environmental improvement action plan, meeting IFC's approval, which when completed will enable the Propal sites to achieve certification of environmental and health and safety management to ISO 14001 and OHSAS 18000 or equivalent standards respectively.	June 2004
2	Implement actions arising from Item 1, and apply for certification of environmental and health and safety management systems.	December 2006
3	Undertake an environmental, health and safety audit of all manufacturing sites ¹ of Carvajal SA and Carvajal Internacional SA. As a result of the audit, develop a timed environmental improvement action plan, meeting IFC's approval, which when completed will enable the Carvajal S.A. and Carvajal Internacional S.A. sites ¹ to achieve certification of environmental and health and safety management to ISO 14001 and OHSAS 18000 or equivalent standards respectively.	June 2004, Colombian sites December 2004, Sites Outside Colombia
4	Implement actions arising from Item 3, and apply for certification of environmental and health and safety management systems.	December 2006
5	Develop and install at the Flexa printing factory, systems to reduce the solvent concentrations in exhaust air to compliance with IFC requirements.	December 2005
6	Install pollution abatement equipment to ensure that particulate and other emissions to air from lime kilns at the Yumbo and Caloto paper mills are within Colombian and IFC standards.	June 2007
7	Undertake feasibility study into burning of waste water treatment plant sludge and bagasse waste as boiler fuel at the Yumbo mill.	December 2004
8	Undertake studies to define the pollution abatement measures required, and a time-bound action plan, to ensure that air emissions from power and recovery boilers at Propal's Yumbo and Caloto plants are compliant with IFC and local requirements.	July 2004
9	Install additional pollution abatement equipment to power and recovery boilers at Yumbo mill to ensure that particulate and other emissions to air are within Colombian and IFC standards.	December 2007
10	Install additional pollution abatement equipment to power and recovery boilers at Caloto mill to ensure that particulate and other emissions to air are within Colombian and IFC standards.	December 2007
11	Review emissions to water from all operational sites of Carvajal SA and Carvajal Internacional SA. Where emissions do not comply with IFC or local requirements, develop time-bound plans to upgrade waste water treatment systems to ensure that these requirements are met.	December 2004
12	Implement water consumption reduction and waste water treatment projects as indicated by Item 11.	December 2005
13	Review water consumption and treatment at Propal's Yumbo and Caloto mills and develop time-bound plans for water conservation projects followed by improvement to waste water treatment plants to ensure that treated effluent meets IFC and local requirements.	December 2004

¹ Other than the non-core businesses that will be divested/phased-out.

14	<p>Implement projects arising from item 13.</p> <p>Stage I:</p> <ul style="list-style-type: none"> i. Remove accumulated sludge from treatment lagoons while continuing operation of waste water treatment plants; ii. Renovate/renew aeration systems as may be necessary <p>Stage II</p> <ul style="list-style-type: none"> i. Install lagoon sludge management system to prevent future accumulation of sludge in treatment lagoons. 	<p>July 2005 (Caloto) December 2005 (Yumbo)</p> <p>December 2006</p> <p>December 2008</p>
15	<p>Develop program to phase out elemental chlorine bleaching of pulp at both mills. The essential elements of this program will be:</p> <ul style="list-style-type: none"> i. monitoring discharged effluent and effluent receiving bodies to identify the presence (if any) of AOX and dioxins and furans; ii. modify first bleaching stage to use 50% chlorine and 50% chlorine dioxide bleaching; iii. continue monitoring program after this change. <p>If item 15 (i) first monitoring should show high levels of dioxins/furans or AOX in discharged effluent, then item 15 (ii) will be advanced.</p> <p>If item 15 (iii) monitoring should shows high dioxin/furan or AOX discharges, then Propal undertakes to implement measures that will reduce the AOX concentration in effluent to IFC and local requirements and the concentration of dioxins/furans to international best practice levels.</p>	<p>December 2004</p> <p>December 2007</p> <p>January 2008</p>
16	<p>Monitoring of PCB using equipment and completion of the ongoing phase out of PCBs from the Yumbo mill, in accordance with IFC's PCB Guidelines.</p>	<p>December 2007.</p>