2010 Activity Report

swico recycling

“Recycler is a profession with a great future, because our society will always produce waste. And the work on the building sites is very fulfilling.”

Stéphane Alibrando, 27, recycler/site and quality control, Bird – RDS SA, Geneva

Editorial

Yesterday, today, tomorrow. Every moment is crucial; it leaves its mark, there are consequences. The decisions I made last week will have an impact on the future, one way or another. Actually, I'm much more focused on the present, though I'm fully aware that the future is on its way. And that it is important, especially when it comes to thinking about the environment and recycling. If we don't raise recycling rates now and improve our processes to the maximum so that products can be recycled in an environmentally friendly way, we will be leaving big problems to future generations. To prevent this from happening, optimum recycling needs to be built into the product development process. Cleantech is a key concept. Cradle to Cradle is another. Read the interview with Professor Braungart on pages 6 to 8 for a compelling and forward-looking perspective on that topic. Another welcome sign is that many companies include principles in their corporate social responsibility (CSR) guidelines that require proper consideration of recycling when defining and developing products. CSR, Cradle to Cradle, environmental technology and cleantech – these issues are being discussed seriously in management circles, but they need to be widely accepted in society at large if change is to be achieved.

SWICO Recycling is the best-practice benchmark in a number of areas. But we are still committed to continuous change, improvement and adaptation to the demands of the future. That includes training recycling specialists. In this report, we also hear the views of young people. I am delighted that the next generation is taking responsibility for the future. Because the future is theirs.

Andreas Knöpfli, President of SWICO

Contents

Young men and women choose to train for a career. Some stay within their chosen profession, opt for further education and progress to management positions. Others learn a second profession. Or even a third. The range of training and further education options in Switzerland is rich and varied. It includes one profession where the future is especially bright: recycling! SWICO Recycling revisited some of the young recycling specialists who told us about their career aspirations in our 2007 Activity Report. There's a chance, too, for apprentices to have their say. All of them tell of great dreams, quiet hopes and minor disappointments.

Cover picture: Sarah Christen, Halter Rohstoff AG, Biel

“Our system is safeguarded for a year.”

Paul Brändli is proud of the reduction in the advance recycling fee (ARF). The Managing Director of SWICO Recycling takes stock, and calls on consumers to take more responsibility.

“The 15% reduction is a conservative calculation. A further cut may be possible in future.”

Paul Brändli, what issues particularly concerned you in 2010?
The 15% reduction in the ARF. For the first time, the safety fund topped CHF 30 million, enough to maintain the recycling system for 12 months without a single franc of income.

How has that been achieved?
Partly thanks to the indexation model we introduced for recyclers and the price increase of commodities, but also due to process efficiencies such as putting logistics services out to tender, which led to a 10% reduction in transport costs. We’re also looking at ways of improving efficiency at collection points and in the basket analysis.

Has SWICO Recycling earned too much in the past?
It’s not a question of earnings, because ours is not a profit-oriented system. Any savings we make are returned to consumers, who end up paying less – up to CHF 2 less per piece of equipment from 1 January 2011. The reason we have built up a safety fund is that we’re talking about an advance fee. We receive the money today and dispose of the equipment at the end of its life cycle. And it can be in use for up to seven years. Theoretically, we ought to be covering the system for the whole of that period, but we have settled on one year because we have enough assets and investments. The average reduction of 15% is a conservative calculation. A further cut may be possible in future.

Were there any setbacks in 2010?
I’m concerned about corporate social responsibility (CSR). In my book, CSR also stands for consumer social responsibility. Consumers dispose of their used appliances for a couple of francs and don’t give a thought to where they will end up – India or Africa, for example, where four or five items are combined to make a single new one, and the rest is left in the scrap yard. People melt the last metals in a pan that they use to cook the vegetables for their dinner – and become ill. That is simply unacceptable.

What is SWICO Recycling doing about it?
We’re organising a Greenforum on this topic in 2011. And we are calling on all consumers to take responsibility for the environment. Journalists should be taking up the issue too.

What is the vision of SWICO Recycling?
In February 2011 we’ll be inviting firms from around the globe to Recycling 2015/2020, where we plan to address that very issue. We need to know what our key players want. They are working in the raw materials market and setting the agenda. Switzerland aims to be a pioneer, but it has only 0.8% of the global market. If we put pressure on producers, they will lose interest in us.

> “I see myself as a mediator between business and sustainability. Both are necessary. Extreme demands and positions won’t get us anywhere.”

What do you see as SWICO Recycling’s role, and yours?
I see myself as a mediator between business and sustainability. Both are necessary. Extreme demands and positions won’t get us anywhere.

What projects will SWICO Recycling be involved in during 2011?
Recycling 2015/2020 is very important. So are mobile phones: the 18% return proportion is still some way short of our target of 30%. The revision of the VREG is another key topic.

The full interview can be found at www.swicorecycling.ch

2010 – the highlights

Greenforum 2010

SWICO Recycling's third Greenforum took place on 18 May 2010. It featured persuasive and fascinating speeches by Prof. Dr Michael Braungart and Prof. Dr Wolfgang Nebel on "Material Circulation and Eco-effectiveness" and "Challenges and Potentials". The increasingly important issue of energy efficiency in connection with electrical and electronic equipment was also examined at the event. A glance at the figures reveals that SWICO Recycling maintained its position as an international leader in the recycling of electrical and electronic equipment despite the economic crisis. The next Greenforum takes place on 24 May 2011.

SWICO Recycling goes mobile

Wondering where to dispose of disused mobile phones? Looking for the nearest recycling point? Since spring 2010, smartphone users have been able to download directions to the nearest recycling point or find a collection point in their canton where they can hand in their electrical and electronic equipment.
Instructions: www.swicorecycling.ch

Reduction in ARF tariff

The Environmental Commission made its decision in June 2010: from January 2011 the advance recycling fee for IT and consumer electronics has been reduced by an average of 15%. This reduction was made possible by the income and raw materials trend in the 2009 business year. The ARF for the remaining product categories was adjusted in the previous year, and therefore remains unchanged. However, SWICO Recycling has absorbed the 0.4% increase in value added tax in all areas.
Current ARF tariffs: www.swicorecycling.ch

SWICO Recycling in Europe

The Conference of the WEEE Forum, which is held every two years, took place on 23 and 24 September 2010 in Zurich. SWICO Recycling welcomed partner companies from throughout Europe. 250 business people joined WEEE member companies, politicians and decision-makers in the field of electrical and electronic equipment recycling. The WEEE Forum is a European association of 40 electrical and electronic waste collection and recovery systems, and SWICO Recycling has been a member since the association was founded in 2003. The Forum aims to optimise the cost-effectiveness of the member organisations' operations, while striving for excellence and continuous improvement in environmental performance. For almost two years now, it has been working to develop a European standard for the processing of electrical and electronic waste. The WEEE Label of Excellence, or WEEElabex for short, has EU support and will oblige all members of the WEEE Forum to adopt the standards at the end of a transitional period. The SWICO Recycling Standards will remain in place, because they are already more stringent than the new minimum requirements.

Collection orders via login

Since November 2010, companies have been able to submit their SWICO Recycling collection orders via a dedicated login. Their data is stored and does not need to be entered for each new order. The advantage of the system is quick and simple access for companies to get an overview of the orders they have submitted, which can then be used for statistical purposes.

Photo competition for schools

Around eight million disused mobile phones are lying around in Swiss homes. SWICO Recycling aims to change that, and in autumn 2010 teamed up with the Pusch foundation to launch a photo competition for schools. The task was to create photographic comics on the topic of "Why do mobile phones need to be recycled?" School students were encouraged to return disused mobile phones to the point of sale or to official collection points rather than throwing them away.
The winners and the best entries can be found at www.swicorecycling.ch

Greenforum

WEEE Forum

SWICO Recycling Mobile

“I’m arguing for intelligent wastefulness.”

Edible chairs and self-dismantling coffee makers are just some of the many ideas Prof. Dr Michael Braungart wants to put into practice. The guru of Cradle to Cradle argues for sensible wastefulness that benefits nature, and even talks of a new industrial revolution thanks to intelligent design.

Michael Braungart, you talk about edible upholstery covers and biodegradable T-shirts. Are you an idealist?
No, just a good chemist. Chemistry cannot simply be “not harmful”; it must also be useful to biological processes. It’s all about quality, and the time is ripe for us to move on from 30 years of prophesying doom and bring really good-quality products to the market.

What exactly do you mean?
At the moment, we manufacture products and then try to find some way of recycling them. But because those products were not made to be recycled, what happens is actually “downcycling”: quality is lost, and so is the quantity of product. That isn’t true recovery. I am convinced that products must be designed from the outset in such a way that they can be fed back into technical or biological processes. Otherwise we end up with mediocre recycling and lose many valuable components in the process. All that is left is rubbish.

How do you convince people of your concept?
In Switzerland, people have a completely different idea of the environment and environmental protection from mine. Here, looking after the environment means destroying as little as possible and saying “I’m protecting the environment, using my car less, taking the train, saving water.” But that doesn’t protect the environment, it just destroys less of it. And there are too many people on this planet for “destroying less” to be enough. After all, I don’t say that child protection involves hitting my child three times instead of five.
Our problem is that we have made many products as good as they can be, but in a fundamentally wrong way. Let me give you some examples: when we talk about recycled paper, we mean old paper that is being reused. But that paper contains printing inks, optical brighteners, stabilisers and additives, none of which were intended to be recycled. In Switzerland, toilet tissue made from recycled paper contains up to five grams of chlorinated hydrocarbons. A kilogram of that paper contaminates over five million litres of drinking water. My argument is this: products need to be designed in such a way that they can flow in cycles. In many countries, we have optimised the wrong things and, in doing so, made them perfectly wrong. Changing that is difficult, because all those wrong systems are highly optimised.

> “It is pointless recovering a bit of gold from a mobile phone: we need to get all the materials back.”

Is Switzerland ready for Cradle to Cradle?
Switzerland has declared its intention of becoming carbon-neutral by 2050. But that is an impossible goal: we are only carbon-neutral when we do not exist. A tree is not carbon-neutral either. It’s an absurd situation: we don’t try to be good, we try to minimise how bad we are. What makes things even more complicated in Switzerland is Calvinism. Calvin taught human beings that they are evil anyway and only God can redeem them. In other words, there is the extra burden of a tradition that tells people they are a source of evil.

What about efficiency?
We devote our energies to optimising the wrong things instead of first asking what is right. Take paper, again. Paper should be designed so that it is combustible and the ash can be returned to biological cycles. Instead of which we optimise the printing process so that it is faster and saves energy. That is a fundamentally wrong way of doing the wrong thing. The difference between efficiency and effectiveness is important: effectiveness means doing the right thing. Efficiency means doing something right. But when you do the wrong thing right, you are doing it completely wrong.

So what is your vision when you talk about eco-effectiveness?
Consider a cherry tree in spring. It doesn’t save, or go without, or avoid doing things. It is wasteful, but in such a way that everything is useful. A tree is not carbon-neutral, it is carbon-positive. My vision is to construct buildings that are like trees. Not passive houses like in Switzerland, but active ones: houses that benefit nature and the environment. Buildings that support species diversity, that clean the air and water. Buildings that are designed to generate energy and supply it to others. When it comes to electrical and electronic equipment, I could imagine a situation in which you sell the customer 3,000 washes instead of a washing machine. Then manufacturers would stop choosing the cheapest components and use the best materials instead. The washing machine would consist of 5 types of plastic instead of 150, and those could then be returned to the technical cycle as nutrients, resulting in much better products.

Prof. Dr Michael Braungart, Professor of Process Engineering at the University of Lüneburg.

Is what you are striving for realistic, or is it just a utopia?
The Netherlands are currently moving towards Cradle to Cradle. If you like, it's the new version of "cradle to grave". The Dutch government has declared its intention to bring its entire public procurement operations into line with the system in 2012. The Belgian presidency also aims to adopt Cradle to Cradle. They understand that it's essential for rare metals such as cobalt, manganese, tungsten, etc., to be returned to technical processes. It is pointless recovering a bit of gold from a mobile phone: we need to get all the materials back. That's why things are now moving at high speed. Companies have caught on to the fact that their labour costs are now lower than their materials costs. And I'm very optimistic when I see that major electrical and electronics firms such as Philips are placing it on the agenda. We need young people who are dedicated to the natural and engineering sciences. We need the smartest people – the ones who will help us start reinventing everything again. We need product designers who conceive products in a completely different way. For instance, we've been working together with a major chemicals manufacturer in the Netherlands to produce adhesive bonds where you basically just heat the electrical appliance to 80 degrees and then the adhesives contract, so that the product completely disassembles itself.

You are arguing that we should consume rather than going without.
I'm arguing for intelligent wastefulness. If we benefit other living organisms we can use many more things, but we need to ensure that they are useful again afterwards. The companies we are working with are making plans for the next 10 years. Carpet manufacturers are selling a useful life for their products of three, five or even eight years, for example. We have windows on the market which are sold on the basis that you can look through them for 25 years, because it is impossible to make energy-saving windows without toxic substances. The customer buys a service, which consists of the ability to look through the windows and their heat-insulating properties.

Are these products more expensive than existing ones?
They are actually cheaper. The edible coverings now used in aircraft are cheaper too. Everything is simpler. You don't need any downstream environmental technologies to dispose of the materials. You incorporate the intelligence from the outset. The slogan is "intelligent wastefulness"!

What do you hope to see from SWICO Recycling?
I'd like to see strategically focused design proposals. For example: in 10 years from now, all electrical and electronic equipment should be manufactured in a way that allows it to be fed back into biological and technical cycles. Then manufacturers can adapt,

Prof. Dr Braungart speaking about material circulation and eco-effectiveness at the Greenforum 2010 at "Lake Side", Zurich.

use Switzerland as a market for innovation, and show us what the future can look like. For Philips, for example, it would be a great help if this approach could be used to lay down rules that don't come from the government but from an institution such as SWICO, which says, "Our goal is materials management." And for a country like Switzerland, which has virtually no valuable metal raw materials of its own, that would be a crucial benefit, because it would transform the whole nation into a raw materials bank. SWICO has been a European leader in developing capture rates – and an awareness of how valuable materials are. That is an impressive achievement. The next step would be to involve designers and devise innovations in such a way that the materials are genuinely available. That would bring us closer to the goal of making secondary products virtually Europe's most important source of raw materials.

What will SWICO Recycling be doing in 10 years if Cradle to Cradle catches on?
In Switzerland, the only materials being returned to biological cycles will be those that are actually biologically useful. Everything else will be going into technical cycles. SWICO will have paved the way for all the other complex products, because it will have taught us how those products can be designed. SWICO will run its own product design school, and people will come from all over the world to learn how to design products. SWICO will license that knowledge and thus generate income. In China, India, Pakistan and Bangladesh SWICO will be offering advice on product manufacture.

What is the relationship between human beings and nature?
Human beings will have to learn to fit in. That includes nutrition. For example, if corn is grown in Switzerland, between 11 and 30 tonnes of humus are lost per year. That's crazy. So is importing palm oil from Indonesia, where the rainforests are being cut down. We need to use our intelligence. A product is not attractive if it makes people ill and becomes refuse. And I believe we are now in a position to put that into practice. But we need to reinvent everything so that it is biologically or technically useful, and not just less harmful.

What drives you personally to invest time and energy in this idea?
I want to be the best chemist and materials scientist in the world. A chemist who makes poison is a bad chemist. I have made it to the top of the international tree, and that position enables me to drive Cradle to Cradle forward. Yes, I want to be proud of what I do. People who ask questions and want to know more encourage me and give me the strength to continue. I invite all young people to join in.

What are your views on mankind?
I am a fan of mankind. People are good and generous and friendly if they feel appreciated. I look at people and I like what I see. People want to do the right thing if they are given the opportunity.

Interview: Angela Cadruvi, SWICO Recycling

The full interview can be found at www.swicorecycling.ch

About Prof. Dr Michael Braungart

Prof. Dr Michael Braungart was born in 1958 and is Professor of Process Engineering at the University of Lüneburg. He holds a professorship at the Erasmus University Rotterdam, where a Cradle to Cradle chair has been established. He is the founder of the Environmental Protection and Encouragement Agency (EPEA) Internationale Umweltforschung GmbH in Hamburg and a visiting professor at the Darden School of Business in Charlottesville, Virginia, USA. In addition to his teaching activities, Prof. Dr Michael Braungart focuses on the work of EPEA (successful collaboration with major industrial producers), notably materials assessment, waste and energy balance, life-cycle design, and design for disassembly.
www.braungart.com

For recycling with a future

Visions, trends and forecasts on recycling – the members of the Environmental Commission met for an in-depth exchange of views – and a look ahead to the future.

As we try to protect our environment today, we need to know what lies ahead tomorrow and beyond. The members of the Environmental Commission have a common goal – and individual ideas about achieving it. Looking ahead to the future of SWICO Recycling, Dominik Wirth comments: "Thanks to our involvement, efficiency and disposal rates are being continually increased without additional costs for the consumer." Christoph Schweizer has equally firm views: "Recycling will be one of the most important raw materials suppliers of the future." He points to progress in reclaiming resources from electronic waste: "Plastics are separated into their different types during recycling and then reused."

From left to right (back row): Roger Keller, Cablecom; Stefan Hildebrand, Novis; René Albert, Dell; Paul Merki, Light + Byte; Rolf von Reding, Hewlett-Packard; Eric Hubacher, ESAG.
(Front row): Dominik Wirth, Alltron; Hans Walker, IBM; Paul Brändli, SWICO Recycling; Kevin Klak, Media-Saturn; Christoph Schweizer, Xerox; Brigitte Schmieder, Canon.
Not shown: Roberto Vitaliano, ALSO.

> "Recycling will be one of the most important raw materials suppliers of the future."
>
> Christoph Schweizer, Xerox

Eric Hubacher predicts rapidly rising demand for metals for technology: "But at the same time there are fewer and fewer primary deposits to exploit. Our electrical and electronic waste is a high-yield secondary deposit, and so it is becoming increasingly valuable. Together with its partners, SWICO will still be offering one of the best collection systems five years down the line, and optimising the recovery of rare metals." Eric Hubacher believes that SWICO, as the owner of the waste, will be more closely involved in technical issues related to reclaiming those metals. Rolf von Reding's view is similar: "Increased use of secondary raw materials will reduce exposure to rising energy prices." Picking up on Professor Braungart's ideas, he comments: "HP is backing recycling-friendly design." Roberto Vitaliano hopes that the present system will win through in its simple form: "Standardisation of systems in Switzerland would make many things easier for customers, collection points and recyclers." He calls on the SWICO Recycling team to raise awareness of the recycling of mobile phones and other products where return rates are too low.

For Roger Keller, 2010 was his first year as a member of the Environmental Commission. His view: "SWICO Recycling will continue to be the industry's preferred private-sector solution for recycling electronic waste 10 years from now."

Stefan Hildebrand's outlook for 2020 arouses one's curiosity: "My vision is for the costs of disposal to be covered by the sale of raw materials, and for consumers to stop having to pay an advance recycling fee." When it comes to the future of recycling, there's plenty of food for thought – and action!

> "Recovery of raw materials and the marketing of secondary raw materials will be increasingly important for SWICO Recycling in future."
>
> Rolf von Reding, Hewlett-Packard

“I became a recycler quite by chance. And I still believe in the profession and its future. Society at large is more and more interested in recycling. Recycling is the way ahead.”

Denise Gämperle, 24, dispatch/incoming materials, Schlunegger-Kocher Transporte AG, Büren an der Aare.

From left to right: Carmen Kälin, intern; Paul Brändli, CEO; Dennis Lackovic, CFO; Roland Vannay, advice/sales; Mélanie Bodmer, intern; Roger Gnos, advice/projects; Roland Habermacher, basket analysis; Sibylle Gaudy, administration.

Making the move into a career

SWICO Recycling has been training the commercial employees of the future for years. Carmen Kälin, 20, talks about her daily routine as an intern at SWICO.

"After I took my school-leaving exams focusing on economics I didn't really know what I wanted to do so I spent a few months in casual jobs. My careers advisor suggested an internship in an office. It was a good idea: I've been an intern at SWICO Recycling since July 2010. What I like best is being able to work in a team. It's a chance for me to find out about the world of work and get my career off the ground. I think it's important for firms to train apprentices. It gives young people the opportunity to build the foundation for their future careers. In any case, it's the only way to find out about the working world. SWICO actually has two interns: Mélanie Bodmer, who is doing her internship as part of her vocational diploma, and me! We each spend part of our time with Recycling and part with the association. I spent the first couple of months working for SWICO Recycling and then we swapped. We'll be changing places again in a couple of months' time. That way we both get an insight into a wide range of areas. What do I particularly like? The chance to work independently and take responsibility for smaller projects. The team supports me when I need them to. I also enjoy the contact with clients, on the phone or by e-mail. Sure, there are tasks at SWICO Recycling that I don't like so much: filing is more of a necessary evil than an interesting challenge. But the positives definitely outweigh the negatives.

An Activity Report is a chance to look back at the past year, and that's what I'm doing right now too. My goal for 2010 was to find an interesting internship, and I achieved it. Looking to the future, I want to find out about my career options. I'm not sure if I want to study at a university of applied sciences or look for a permanent job. SWICO Recycling would be an interesting employer for me, for instance. Who knows …"

The SWICO Recycling staff

Carmen Kälin: the friendly voice on the telephone and speedy at administration. **Paul Brändli:** manages business and works for SWICO Recycling abroad as a member of the WEEE. **Dennis Lackovic:** has a firm grasp of the figures and a sympathetic ear for suppliers and customers. **Roland Vannay:** advisor on collection points in French-speaking Switzerland who also acquires further Convention signatories. **Mélanie Bodmer:** helps out with administrative tasks and holds the fort on the telephone. **Roger Gnos:** the point of contact for everything that the collection points in German- and Italian-speaking Switzerland need. **Roland Habermacher:** analyses deliveries received by recyclers, dismantling companies and collection points. **Sibylle Gaudy:** all the ARF invoices pass through her hands, and she is also in charge of collections.

The environment needs specialists

Recycler with Swiss Federal VET Diploma. That's the goal for three young women and their 25 colleagues who embarked on their three-year apprenticeship in August 2010. SWICO visited them at their vocational college.

They come from St. Gallen, Lucerne, Zurich and all over German-speaking Switzerland, and they meet at 9 a.m. every Wednesday in the Zürichsee training centre in Horgen: Vera, Christian, Jan, Emre – and all the others. Their ages range from 16 to 22. Trendily dressed and eager to learn, they set down their big backpacks and take their places behind their desks. Today's lesson is on materials science. The students need to be able to distinguish between a vast range of materials – everything from metals to paper, textiles, plastic, construction waste and electrical and electronic waste. There are 30 different types of paper alone. Waste, as teacher Roland Habermacher points out, is not simply waste: "The subject matter is complex. Materials need to be sorted very carefully to ensure best quality." Otherwise the goods will be returned, and complaints from customers are inevitable.

So are the young people in the classroom all meticulous and patient types? As Andreas Hilfiker, one of the apprentices, says: "Good recyclers need to keep their eyes open. You have to separate things out, and not just chuck aluminium in with the lead." Recycling needs care, and so does handling machines. It's something the aspiring specialists learn at vocational school in the lessons on "processes and equipment", which teach them all they ever wanted to know about separating, compressing and cutting.

I was quite thin when I started. But the work builds up your muscles and your strength.

Vera Karrer, Entsorgung und Recycling Zurich

Recyclers are really important. Without us, the planet will end up as a giant rubbish tip.

Christian Hülsmann, Bühlmann Recycling AG, Münchenwiler BE

We will always be needed

Recycling has been a recognised profession since 2000, but it is still widely unknown. Roland Habermacher was one of the first apprentices; now he is head of subject for professional training in recycling: "About 40 people a year complete their training in French- and German-speaking Switzerland. It is difficult to recruit new trainees. The profession simply isn't widely enough known yet." Habermacher believes that more recycling specialists will be needed in future. That's good news for the first-year apprentices. For many, the prospect of a secure future was one of the reasons for choosing the profession. Pascal Herger is one of them: "Recyclers will always be needed, because people always produce rubbish." Vera Karrer agrees: "It's a profession with a future and that gives me security." Born in 1993, she now works for ERZ Entsorgung + Recycling in Zurich. "I was quite thin when I started, but the work builds up your muscles," she recalls. She also likes the fact that you always need to be assiduous. And her unwavering enthusiasm is evidenced by the fact that she is already thinking about further training. "It's a young profession that will continue to develop," she says.

There will be more and more recycling firms because there is more and more waste. It's a profession with a future.

Jan Koller, Solenthaler Recycling AG, Gossau SG

"I want to continue training to keep up to date with everything, including materials." Although Vera Karrer enjoys physical work, she would consider moving over to procurement at some point. Her colleague Matthias Holderegger from St. Gallen sees things differently: "I prefer working with my hands to being in an office; what I enjoy most is driving the forklift truck."

Marcel Beyeler, too, has no desire for an office job: “I like working outdoors; we’re in the open all the time.” Emre Doksandokuz enjoys

> The vocational college is useful regarding machine handling. The theory that goes with the practice, you might say.
>
> Emre Doksandokuz, Schönenberger Transport und Recycling AG, Lichtensteig SG

the variety: “Driving the forklift, serving customers outside when the weather is nice, answering questions – it never gets boring.” Emre is keen to learn how things work: the vocational college gives him the theoretical background to the practical experience. And how important is the environment for the trainees?

For the sake of the environment

The journalist asks whether everyone in the class is an eco-freak. Her question is greeted with peals of laughter, followed by some firm statements. Ruben Köstli, for instance: “For me, the environment is healthy when we have raw materials for later.” Jan Koller adds: “We need recyclers to make sure that Switzerland stays clean and doesn’t drown in rubbish. I’m an environment-conscious person. I don’t drop litter.” Emmanuel Mörgeli comments: “I collect cigarette butts in my jacket pocket and separate tins and glass – not the least for the sake of my sister’s small children.” Then there’s Christian Hülsmann, who moved to Switzerland from Germany in summer 2010 and actually planned to become a hairdresser: “Our profession is important so that the planet doesn’t become a giant rubbish tip,” he says.

If everything goes according to plan, in 2013 these 28 young men and women will receive their Swiss Federal VET Diplomas as recyclers – and they’ll be reliable and practical specialists working for a clean environment.

“Recyclers are specialists, not just rubbish collectors. The subject matter is very complex, and the work is of great importance to all of us. Raw materials are in short supply; every gram needs to be recycled and brought back into circulation. I like the apprentices, and I’m happy to pass on my knowledge to them. These young people must be physically fit and enjoy dismantling things. They must be interested in interrelations and the entire production chain, from manufacturing to recycling. They also need to work accurately. I believe it is important to learn the job from scratch – with all the basic knowledge that entails. Then you know what materials smell like, how they feel, how heavy they are. Under the new education ordinance, recyclers will be trained as all-rounders in future, supplemented by a special subject related to their employers’ fields of business, on which they’ll be examined in depth during their final exams. I think that’s a reasonable idea. Any topic not studied for evaluation purposes may still be revisited at a later date thanks to the modular system. It is impossible to cover the whole subject in detail in three years. What’s more, new topics are constantly being added, especially those related to scarcity of resources; supplies of some of the critical metals will only last for perhaps another 8 to 10 years. That is sure to increase the reputation and the prestige of the recycling professionals among the population at large. People will be happy to know that specialists are taking care of the separation and recycling of materials, with ecology and economics working hand in hand.”

Roland Habermacher, head of subject for professional training in recycling, has been teaching the textiles, plastic, metal and paper modules since 2004.

SWICO helps with financing

Swiss Recycling provides support for training as a recycler. In 2009 it took on a loss of CHF 70,000 related to the reorganisation of the profession, new training documentation and a model training course. Swiss Recycling now provides a deficit guarantee for three years, of up to CHF 15,000 per year. SWICO Recycling has made a financial contribution through its membership at Swiss Recycling. Other members of Swiss Recycling are Ferro Recycling, Igora, Inobat, PET-Recycling Schweiz, Texaid and VetroSwiss.

Flat screens: recovering resources, removing toxic substances

As part of the flat-screen project, a number of disposal options were examined and future requirements proposed.

Flat screens are the fastest-growing equipment category.

In 2010, approximately 350,000 PC LCD monitors, around 40,000 flat-screen TVs and roughly 250,000 laptops were disposed of via SWICO Recycling. Those figures are set to rise significantly in the years ahead. Flat-screen TVs and monitors are the fastest-growing equipment category within the electronic waste stream processed by SWICO Recycling.

The backlighting of conventional LCD flat-screen TVs and monitors contains mercury as well as one or two layers of indium tin oxide. Indium, a by-product of zinc extraction, is a rare metal found in small quantities in the earth's crust.

A rethink on processing

The Empa study contains information on the composition of flat-screen TVs and monitors and an estimate of expected quantities. It also examines the collection, storage and transport of flat-screen TVs and monitors. Despite potential breakage of the backlighting, no critical mercury emissions result. The report also assesses a number of options for future disposal, based on the legal framework: thermal recovery in waste incineration plants, manual dismantling and mechanical processing.

Thermal recovery leads to a relatively low increase of the mercury levels in incineration plants, but given the low calorific value of flat-screen TVs and monitors and the loss of the valuable metals contained in them, this option is unsuitable.

Manual dismantling is a possible method of disposal. Three to four flat-screen TVs and monitors per hour can be processed in this way. Provided the relevant safety rules are complied with, the amount of mercury released during dismantling will not exceed the Swiss occupational exposure limit value of 50 µg/m^3.

Mechanical processing allows adhesions of mercury on the recyclable components to be kept below 1 mg Hg/kg. However, this process leads to gaseous emissions, and a sealed plant operating under a partial vacuum is required. Such plants nowadays correspond to the state of the art, but there are no suitable inspection measurements for the processing of flat screens available yet.

From an economic perspective there is no incentive to recover indium, but there may be an argument for doing so due to its scarcity.

Amending the regulations

The study recommends adjustments of the existing technical guidelines and a ban on the thermal recovery of entire or partly dismantled flat-screen TVs and monitors in waste incineration plants. Where manual processing is applied, health and safety requirements must be complied with. Mechanical processing should be carried out in line with the state of the art and be permitted only in closed, compact installations operating under a partial vacuum. Tests are currently being carried out.

Need for controls on recovery of plastics

The WEEE Forum project co-initiated by SWICO Recycling recommends controls on the treatment of plastics.

On average, electrical and electronic waste consists of about 23% plastics. There are substantial differences between the various product categories. Medical equipment, for example, contains only about 3% plastic, whereas for toys the amount can rise to more than 70%. For this reason, the disposal and recycling of plastics from disused electrical and electronic equipment is of great importance, both ecologically and economically. Plastics may contain hazardous substances and may be costly to treat, depending on the way of disposal or recovery.

In a study commissioned by the WEEE Forum, Empa examined two issues in this area:

- What are the concentrations of substances regulated by the EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive) in plastics?
- What are the implications for an environmentally sound recovery of plastics?

The amount of plastic in electrical and electronic equipment varies widely.

Results from throughout Europe

In a literature review, the most quantitatively relevant types of plastics in WEEE categories and product types were identified, and the deposit of the heavy metals and brominated flame retardants regulated by the RoHS Directive was estimated.

Based on the results of the review, a Europe-wide sampling campaign was carried out on mixed WEEE categories, “pure” WEEE categories and selected products. The samples were provided by a total of 15 WEEE Forum members and analysed for heavy metals (lead, cadmium, chromium and mercury) and flame retardants (PentaBDE, OctaBDE, DecaBDE and DecaBB). In addition to these substances, which are governed by the RoHS Directive, other brominated flame retardants present in electrical and electronic equipment (HBCDA, TBBPA), the total bromine content, the phosphorus content as well as elements such as antimony were included in the study.

Differing concentrations of hazardous substances

Based on the results of the analysis, the mixed plastics studied were divided into four groups with different concentrations of hazardous substances. Using this allocation, there is no uncritical mixed plastics fraction from WEEE. Mixed plastics from WEEE must be separated into recyclable and non-recyclable plastics before they can be recovered. Plastics containing no or only low levels of hazardous substances must be regularly analysed and checked before they can be sent for materials recovery. Where plastics containing hazardous substances are involved, it is necessary to ensure that they are not subsequently mixed with those that are not, so that the statutory thresholds are complied with. The casings of CRT screens used in computers and TVs contain particularly high concentrations of flame retardants. With a view to implementation of its results, the study proposes requirements for the materials recycling of plastics.

The report is available from www.weee-forum.org (→ news centre 07.10.10)

Sharp rise in quantities processed

New evaluations of material flows lead to a more detailed capture of equipment categories and their composition.

SWICO Recycling handled 56,594 tonnes of waste electronic equipment in 2010, a rise of 8% over the previous year. This compares with an increase of just 3.7% the year before. Following adjustments to the calculation parameters, the total amount can now be broken down into 14 different equipment categories. The largest component is CRT television sets, at around 27%. The "CE, mixed" category, which includes items such as MP3 players, DVD players, video game consoles, surround systems, set-top boxes and vehicle multimedia systems, accounts for around 20%. Other important categories are large equipment/copiers and CRT monitors, at around 10% each. LCD TVs and monitors, as well as laptops, are still less important in terms of weight, as they are often not sent for recycling but instead passed on to friends or acquaintances who continue using them. Around 382,000 mobile phones were collected, corresponding to roughly 18% of the sales figure for 2010. With the help of various marketing measures, SWICO Recycling has thus achieved a 20% rise in the return rate.

The composition of the individual categories is determined on the basis of processing tests. These tests are run by Empa and carried out in the recycling companies. A previously set quantity of equipment is collected and the resulting components documented. Around 40% consist of metals such as iron, aluminium, copper and chromium steel. In second place are plastics and CRT glass and/or LCD modules, at over 20%. Printed circuit boards – the most valuable components with a high content of noble metals such as gold, silver and palladium – make up just 3.6% of the total.

Items containing pollutants, such as batteries, capacitors or components containing mercury, add up to less than 1%. Nevertheless, one of the most important jobs for the recycling companies is to ensure that these components are separated and conveyed into a special recycling or waste disposal process. Dental equipment is collected and recycled separately under the SWICO Recycling system.

Quantities collected by device type (A and B signatories)

	Quantity	Average weight (in kilos)	Metals (in tonnes)	Plastics (in tonnes)	Metal-polymer composites (in tonnes)	Cables (in tonnes)	Glass and/or LCD modules (in tonnes)	Printed circuit boards (in tonnes)	Pollutants (in tonnes)	Other[3] (in tonnes)	Total (in tonnes)	Increase/ decrease from 2009
PC monitors, CRT	295,109	18.40	798	1,080	515	140	2,375	497	< 1	25	5,429	4%
PC monitors, LCD	348,759	6.26	933	522	–	9	550	152	7	10	2,183	12%
PCs/servers	402,782	12.26	4,063	284	13	151	–	411	16	–	4,939	–25%
Laptops	250,843	3.55	270	251	91	5	78	130	62	4	890	18%
Printers	382,096	10.19	1,380	2,094	240	21	27	68	1	63	3,894	–20%
Large equipment/copiers	50,258	117.85	3,591	1,140	684	128	25	123	50	181	5,923	[4]
IT mixed[1]	292,905	12.60	2,040	842	477	88	8	71	40	127	3,692	[4]
CRT television sets	527,090	29.41	1,527	3,169	516	54	10,021	190	15	8	15,500	[4]
LCD monitors	38,286	27.61	434	156	–	21	271	129	10	36	1,057	[4]
CE mixed[2]	2,265,786	4.79	5,993	2,474	1,400	257	23	208	116	374	10,846	[4]
Mobile phones	381,985	0.13	–	19	–	–	3	10	17	–	51	[4]
Telephones, other	893,750	2.25	1,114	460	260	48	4	39	22	69	2,015	[4]
Photo/video	207,248	0.49	56	23	13	2	< 1	2	1	4	102	[4]
Dental equipment											73	[4]
Total in tonnes			**22,198**	**12,517**	**4,210**	**924**	**13,385**	**2,029**	**356**	**902**	**56,594**	8%
Total in %			**39.2%**	**22.1%**	**7.4%**	**1.6%**	**23.7%**	**3.6%**	**0.6%**	**1.6%**		

[1] IT equipment, mixed, excluding monitors, PCs/servers, laptops, printers, large equipment/copiers
[2] Consumer electronics, mixed, excluding TVs
[3] Packaging and other waste, toner cartridges
[4] New category, no prior-year figures available

Source: Esther Müller, Empa, based on processing and basket analyses

PC monitors, CRT

Metals	14.7%
Plastics	19.9%
Metal-polymer composites	9.5%
Cables	2.6%
Glass	43.7%
Printed circuit boards	9.1%
Pollutants	<0.1%
Other[3]	0.5%

PC monitors, LCD

Metals	42.8%
Plastics	23.9%
Metal-polymer composites	0.0%
Cables	0.4%
Glass	25.1%
Printed circuit boards	6.9%
Pollutants	0.3%
Other[3]	0.5%

PCs/servers

Metals	82.2%
Plastics	5.7%
Metal-polymer composites	0.3%
Cables	3.1%
Glass	0.0%
Printed circuit boards	8.3%
Pollutants	0.3%
Other[3]	0.0%

Laptops

Metals	30.6%
Plastics	28.2%
Metal-polymer composites	10.2%
Cables	0.5%
Glass	8.8%
Printed circuit boards	14.6%
Pollutants	6.9%
Other[3]	0.4%

Printers

Metals	35.4%
Plastics	53.8%
Metal-polymer composites	6.2%
Cables	0.5%
Glass	0.7%
Printed circuit boards	1.8%
Pollutants	<0.1%
Other[3]	1.6%

Large equipment/copiers

Metals	60.6%
Plastics	19.3%
Metal-polymer composites	11.6%
Cables	2.2%
Glass	0.4%
Printed circuit boards	2.1%
Pollutants	0.8%
Other[3]	3.5%

IT mixed[1]

Metals	55.3%
Plastics	22.8%
Metal-polymer composites	12.9%
Cables	2.4%
Glass	0.2%
Printed circuit boards	1.9%
Pollutants	1.1%
Other[3]	3.5%

CRT television sets

Metals	9.9%
Plastics	20.4%
Metal-polymer composites	3.3%
Cables	0.4%
Glass	64.7%
Printed circuit boards	1.2%
Pollutants	0.1%
Other[3]	<0.1%

LCD monitors

Metals	41.1%
Plastics	14.8%
Metal-polymer composites	0.0%
Cables	2.0%
Glass	25.6%
Printed circuit boards	12.2%
Pollutants	0.9%
Other[3]	3.4%

CE mixed[2]

Metals	55.3%
Plastics	22.8%
Metal-polymer composites	12.9%
Cables	2.4%
Glass	0.2%
Printed circuit boards	1.9%
Pollutants	1.1%
Other[3]	3.5%

Mobile phones

Metals	0.0%
Plastics	38.2%
Metal-polymer composites	0.0%
Cables	0.0%
Glass	6.9%
Printed circuit boards	20.6%
Pollutants	34.4%
Other[3]	0.0%

Total recycled components

Metals	39.3%
Plastics	22.1%
Metal-polymer composites	7.5%
Cables	1.6%
Glass	23.7%
Printed circuit boards	3.6%
Pollutants	0.6%
Other[3]	1.6%

Thank you!

640 companies in the areas of information technology, office electronics, consumer electronics, communications, the graphics industry, and measuring and medical technology have now signed the SWICO Recycling Convention.

3M (Schweiz) AG | 3T Supplies AG | A | A. Koller AG | A. Marcandella AG | Aastra Telecom Schweiz AG | ABC Dental equipment AG | ABC SOFTWARE GmbH | ACCO Deutschland GmbH & Co. KG | Acer Computer (Switzerland) AG | ad notam ag | ADIVA Computertechnologie AG | ADRENIO Trading GmbH | Aduno SA | AG Neovo Technology B.V. | Agfa Graphics Switzerland AG | Agfa HealthCare AG | Albis Technologies AG | Alltron AG | AlphaSat GmbH | ALSO Schweiz AG | Alto Hifi AG | AM Digital AG | AMO Switzerland GmbH | Andres Audio | Anthos Schweiz AG | Apple Sales International | ARP Datacon AG | Arrow Central Europe GmbH | Ascom (Schweiz) AG Security Solutions | ASL Electronic AG/SA | AstraZenca | Atena Distribution AG | Audio Tech KST AG | Autec GmbH | Autronic AG | AV Distribution AG | Avalon Computer AG | Avaya Switzerland GmbH | Avcom Distribution GmbH | Avision AG | AXA Winterthur | Axavis | Axsionics AG | B | B&W Group (Schweiz) GmbH | Bader Versand Schweiz AG | Balcar Electronics AG | Balzo AG | Bang & Olufsen AG | Baumann Koelliker AG | Bausch & Lomb GmbH | Beletec AG | BELSAT AG | BenQ Deutschland GmbH, Hamburg | Berlinger & Co. AG | Bestprice Audio Video Est. | Beta Solutions GmbH | Betzold Lernmedien GmbH | BHS Binkert AG | Bixi Systems | Bleuel Electronic AG | Blue Coat Systems International SARL | Boll Engineering AG | Bosch Sicherheitssysteme GmbH | Bose AG | Bourquin Logistique Dentaire Sàrl | Brack Electronics AG | Brecom Betriebs AG | Brother (Schweiz) AG | Bull (Schweiz) AG | C | Cablecom GmbH | Canon (Schweiz) AG | Carfa Waser + CO AG | car-media.ch GmbH | Carotec Schatz AG | CCV – Jeronimo (Suisse) SA | CeCoNet AG | CED Consumer Electronic Distribution AG | Chauvin Arnoux AG | Chromos AG | Cisco Systems International BV | Cisco Systems-Linksys | CL-Electronics GmbH | CMS Peripherals Ltd | COLAG AG | Coltène/Whaledent AG | ComBridge AG | Comerco GmbH | Compex Médical SA | Comsys AG | Comtronic GmbH | Conforama Suisse | Conrad Electronic AG | Coop | Cornelia Versand GmbH | CPP AG Computer Präsentations Partner | Cray Inc. | CREALOGIX E-Payment AG | Cropmark AG | Crossroads Europe GmbH | CTA Energy Systems | D | Damovo Schweiz AG | Danfoss AG c/o RENE AG | Darius Handelsgmbh | Data Store AG | DataID AG | Dell GmbH | DeltaNet AG | DEMA DENT AG | Dental equipment 2000 SA | Dental equipment Concept | Dental equipment Services Sàrl | Dental equipment Technique Sàrl | Dentatech Handels AG | Devillard SA | Diebold Selbstbedienungssysteme (Schweiz) GmbH | Digana AG | Digitec AG | Dionex (Switzerland) AG | Distrelec Bereich der Dätwyler Schweiz AG | DKB Household AG, Consumer Electronics | D-Link Schweiz GmbH | Dr. W.A. Günther Audio Systems AG | Dürr Dental equipment AG | Dynavox Electronics SA | E | Eaton Industries II GmbH | eb-Qual SA | ECS International Switzerland SA | Edition text&bild GmbH | Edwards Lifesciences AG | EET (Schweiz) GmbH | Egli Fischer & Co. AG | Einstruction | Eizo Nanao AG | Elbro AG | Elcoma AG | ELCONEX AG | ElectronicPartner Schweiz AG | Elektron AG | EMC Computer Systems AG | Engelberger AG | ESAG innovative services | Esselte Leitz Switzerland GmbH | Eurotronic Establ. | F | F5 Network Ltd | Facora AG | FAG Graphic Systeme S.A. | FARO EUROPE GmbH & Co. KG | Fellowes GmbH | Fenwal Europe sprl | FlexDSL Telecommunications AG | FNAC (Suisse) SA | Frama Suisse AG | Freecom Technologies AG | Fritz Schumacher AG | Fujifilm (Switzerland) AG | Fujitsu Technology Solutions AG | Fusionio | Fust AG | G | Galexis AG | GE Consumer & Industrial SA | Genesis Technologies AG | Getronics (Schweiz) AG | ghe-ces electronic ag | Gigaset Schweiz GmbH | Globalstar Europe Satellite Services Ltd | GMC Trading AG | GN ReSound AG | GOP AG | Graphax AG | GraphicArt AG | H | H. Schneider Handels AG | Hama Technics AG | Hamelin GmbH | Hand Held Products | Harman Deutschland GmbH | Häubi AG | HB (Switzerland) AG | Healthco-Breitschmid AG | Heer Musik AG | heico Dent | Heidelberg Schweiz AG | Heidenhain (Schweiz) AG | Heinrich Heine Handelsgesellschaft AG | Hermann Kuhn AG | Hewlett-Packard (Schweiz) GmbH | Hi-Fi Studio Sigrist | High-End Company AG | Hitachi Europe GmbH | Honeywell AG | Horn Distribution (CH) AG | Hotline SA | Hulaas IT Solutions | Hunziker AG Thalwil | I | IBC Retail Systems S.A. | I-Bit Pro AG | IBM Schweiz AG | Icon Outdoor AG | Ifrec SA | Igepa Adoc SA | ImproWare AG | Ineltro AG | InfoPrint Solutions Company | Ingram Micro GmbH | INNOMATEC GmbH | Innovativ S AG | Inputech AG | Interact Consulting AG | Intercard AG | Interdiscount AG | Interfunk AG | ITRIS Informatik AG | J | JET Schweiz IT AG | Joah Cooperation AG | John Lay Electronics AG | JORDI RÖNTGENTECHNIK AG | Jumbo Markt AG | JVC Professional Europe Ltd. | K | Kablan AG | KALADENT AG | Kavo Dental equipment AG | KCI Medical GmbH | KDS Distribution AG | KESO AG | Kodak GmbH | Koelliker Büroautomation AG | Kofax Logistics AG | Kofax Schweiz AG | Kolok AG | Kyocera Mita Europe B.V. | L | Laborplus AG | LaCie AG | Leica Camera AG | Leitronic AG | LENOVO (Schweiz) GmbH | Levitronix GmbH | Lexmark (Schweiz) AG | Lidl Schweiz GmbH | Light + Byte AG | Littlebit Technology AG | LOMETRAL AG

| M | M. Züblin AG | Mailfinance AG | Manor AG | manroland Swiss AG | Marlex | Max Hauri AG | Maxdata (Schweiz) AG | me2me AG | Media Saturn Management AG | medi-lan | Medium Vertriebs AG | Micromeritics SA | MICROSOFT European Operation Centre | Migros-Genossenschafts-Bund | Mikrona Technologie AG | Miracom AG | Misco Germany Inc. | MMD Monitors and Displays Nederland BV | Mobatime Swiss AG | MobilePro AG | Mölnlycke Health Care AG | Monacor Schweiz AG | Montana Audio Systems GmbH | Monzoon Networks AG | Motion Computing Inc. | Motorola GmbH | MPI Distribution | MT Media Trend SA | Multicom AG | Multimediatec. AG | Musica Nova AG | Musik Meyer AG | Musikvertrieb AG | Myotest SA | N | NCR (Schweiz) GmbH | Nebus AG | NEC Unified Solutions | Neopost AG | Netto24 / Microspot.ch | Network Equipment Technologies Inc. | Neuro-MEDITEC AG | Newspeed AG | Nexgen AG | NIKE (Switzerland) GmbH | Nikon AG | Nimex AG | Niwotron AG | Nokia Austria GmbH | Novatel Wireless Inc. | Novia AG | Novis Electronics AG | O | Obrecht Technologie AG | Océ (Schweiz) AG | OF Schweiz AG | Off-Grid Systems GmbH | Office Factory AG | OKI Systems (Schweiz) | Olympus Schweiz AG | Omni Ray AG | Omnisec AG | Openstorage Schweiz AG | Oracle Software (Schweiz) GmbH | Orange Communications AG | Ott + Wyss AG | Otto Mathys Cashtec AG | P | P. Wyss Photo-Video en gros | Palm | PANalytical B.V. | Panasonic Italia | Panatronic (Schweiz) AG | Pansoft AG | Parna SA | Pataco AG | Patton-Inalp Networks AG | Paul Stoffel Data AG | PayTec AG | PC Engines GmbH | PC-Ware Systems (Schweiz) AG | Perrot Image SA | Philips AG | Philips AG Healthcare | Phoenix Consulting GmbH | Phonak AG | Phonak Sounds AG | Piega SA | Pixel Systems AG | Plusmusic AG | Pocketmedia AG | Polaroid Trading BV | Polycom (Netherlands) BV | Polyfon Distribution AG | Portacomp AG | PowerData SA | Prestige TV Schweiz GmbH | Primelco System Device AG | Print & More Competence AG | Print Tech Plus AG | Print-Fix Drucktechnik AG | Pro Idee Catalog GmbH | Proditec AG | Profot AG | Provicon GmbH | PWS Cardinaux SA | Q | Qonix SA | Qubica AMF | R | Radio Matériel SA | RCD AG | Reco Electronic AG | REDFOX AG | Rein Medical Systems AG | René Faigle AG | René Koch AG | Revamp-it | Revox | RICOH SCHWEIZ AG | RISC | Roadstar Management SA | Rodata AG | Rodent AG | Roland (Switzerland) AG | Ross Video Limited | Rotronic AG | ROX Asia Consultancy Ltd | S | Sacom SA | Safenet Technologies Schweiz AG | Sagemcom Austria GmbH | Samsung Electronics Austria GmbH | Sanford (Schweiz) AG | SANYO Sales & Marketing Europe GmbH | SAP Electronic AG | Schefer Informatik AG | Schneider Electric IT Switzerland AG | SDS Music Factory AG | Securiton AG | Seitz Phototechnik AG | semi-electronic ag | SERTRONICS - Service und Logistik AG | Server Technology, Inc. | Seyffer CCW AG | Sharp Electronics (Schweiz) AG | Sicon Socomec AG | Siebenhengst Walti Aellig Gresch | Siemens Enterprise Communications AG | Siemens Schweiz AG, Civil and National Security | Siemens Schweiz AG, Industry Sector, Building Technologies | Siemens Schweiz AG, Regionalgesellschaft Schweiz | Silentsoft SA | Silicon Graphics GmbH | Sim Eletronics | Simpex IT-Solutions AG | sinamatt Dental equipment ag | Sinus-Technologies | Sirona Dental equipment GmbH | Sistrade Sàrl | SIX Card Solutions AG | Skyvision GmbH | Sony Computer Entertainment Switzerland AG | Sony Ericsson | Sony Overseas SA | Soundtrade AG | sowacom GmbH | Spandex AG | St. Jude Medical (Schweiz) AG | STAG ICP AG | Steffens AG | STEG Computer GmbH | STG Distribution | Stilus SA | Studerus AG | SUPAG Spichtig und Partner | SUPRAG AG | Swisscom (Schweiz) AG | Swissphone Wireless AG | Swissvoice AG | Systeam Schweiz GmbH | T | TA Triumph-Adler Visinfo AG | TBM AG | Tchibo (Schweiz) AG | Tchibo direct GmbH | Tcplus (Switzerland) GmbH | TCPOS SA | Tecan Schweiz AG | Tech Data (Schweiz) GmbH | TechniSat Digital GmbH | Technomag AG | TecPro AG | Telanor AG | TELGO AG | Telion AG | Teradata (Schweiz) GmbH | Terra Wortmann Schweiz GmbH | Texas Instruments ITC | Thali AG | Thomson Broadcast & Multimedia AG | TI-Dental equipment Service SA | Timeless Products GmbH | TIPE GmbH | TKS Telecom | TOM Elektronik GmbH | Tom Tom Sales BV | Toshiba Europe GmbH | Toshiba Tec Switzerland AG | Toys "R" US AG | transtec Computer AG | TRIGRESS Security AG | Turnkey Communication AG | Tyco Fire & Integrated Solutions Schweiz AG | Typon Service AG | U | Ubi Games SA | Ultim Trading Top-D | Unisys (Schweiz) AG | Upgrade Solutions Ltd. (USL) | V | VAC René Junod SA | Varian AG | Vedia SA | Veeco Instruments | Verizon Sweden AB | vibuy AG | Videotronic AG | Visopta AG | Vivanco Suisse AG | W | Waren Treuhand GmbH | Waser & Co AG | Waser Bürocenter AG | Wifx Sàrl | Wilhelm Sihn AG | Wilux Print AG | Wincor Nixdorf AG | Wycom AG | Wyscha Computer AG | X | Xerox AG | Y | Yamaha Music Europe Gmbh | Z | Z-Audio Animatec AG | ZETA Dental equipment SA | Ziil Informatiklösungen GmbH | ZTE Sweden

The SWICO Recycling success story continues thanks to our Convention signatories as well as our recycling contract partners Immark AG, Reonik Recycling AG, RUAG Components AG – Environment, Thévenaz-Leduc SA, Consortium Cablofer-RDS, Thommen AG – Ceren AG, Bühlmann Recycling AG, Solenthaler Recycling AG, our logistics partner Cargo Domizil AG, the Federal Office for the Environment, the approximately 650 SWICO Recycling collection points, over 6,000 retailers and wholesalers and the Empa test centre.

Business year

Trend in Convention signatories

Number of Convention signatories rises by 19%

As of 31 December 2010 SWICO Recycling has 640 Convention signatories from the areas of information technology, office electronics, consumer electronics, communications, dental equipment, photographic equipment, and measuring and medical technology. A further three A signatories decided to become B signatories in future due to a lack of their own returns.

We were delighted to welcome 102 new members of the SWICO Recycling system in 2010, bringing the total number of Convention signatories to 640.

An average of two new signatories join each week, with the largest increase coming from the office/IT sector.

By division since 1.4.1994	A signatories	B signatories	Total
1994	36	0	36
1995	41	19	60
1996	44	24	68
1997	48	35	83
1998	50	51	101
1999	51	75	126
2000	49	100	149
2001	44	159	203
2002	43	207	250
2003	40	242	282
2004	34	295	329
2005	30	341	371
2006	26	445	471
2007	23	553	576
2008	20	505	525
2009	18	520	538
2010	**15**	**625**	**640**

By divisions (in %)	2009	**2010**
Office electronics/information technology	48	**51**
Consumer electronics	30	**29**
Communications	11	**8**
Dental equipment	5	**7**
Photographic equipment	6	**5**

Share of costs

B signatories Expenditure as percentage of total costs	2009	**2010**
Recycling hardware	42.2	**40.0**
Logistics	29.3	**27.9**
Collection points	12.4	**13.9**
Packaging disposal	5.7	**8.7**
ADF on batteries	2.1	**2.3**
Audits	1.8	**0.7**
PR work	4.0	**4.1**
Administration	2.5	**2.5**

Source of goods

57% of the total quantity recycled,

i.e. 32,067 tonnes of electronic waste, were disposed of by private households via collection points and retailers in 2010 (total: 56,594).

Business customers	43%
Private households	57%

Cargo Domizil transport volume

Logistics partner of SWICO Recycling

The total volume transported (in tonnes) declined by 33% in 2010. The number of shipments fell by only 17%, a clear indication that Cargo Domizil continues to transport the "public service" component (one or two pallets per shipment).

The partnership with Cargo Domizil has been extended for a further two years, starting from 1 January 2011. SWICO Recycling would like to thank Cargo Domizil for the high quality of its contribution to the recycling cycle.

CDS Cargo Domizil AG	2009	**2010**
Tonnes transported per year	21,452	**14,246**
Pallets transported per year	89,718	**55,686**
Shipments per year	24,157	**19,818**
Shipments per day	97	**80**
Average weight per pallet in kilos	239	**256**
Number of online orders per year	27,636	**23,032**
Number of online orders per day	111	**93**
Proportion of total volume	41%	**25%**

Quantities

60,000 tonnes of electronic waste expected in 2011

The increase in quantities taken back in 2010 was approximately 4,000 tonnes; that is a rise of around 7.5%. A total of 56,594 tonnes of electronic waste was taken back.

Quantities taken back (in tonnes)	Manufacturers	Retailers	Collection points	Companies	Total
1998	5,838	2,439	967	–	9,244
1999	6,631	4,192	871	–	11,694
2000	5,920	5,443	1,418	–	12,781
2001	4,772	6,565	1,879	–	13,216
2002	4,284	13,839	5,570	–	23,693
2003	2,270	11,895	11,758	3,700	29,623
2004	4,900	8,309	15,100	8,100	36,409
2005	5,054	10,108	17,268	9,687	42,117
2006	3,687	9,677	21,198	11,521	46,083
2007	5,887	9,812	22,567	10,793	49,059
2008	5,537	9,704	23,346	12,166	50,753
2009	5,286	9,002	28,816	9,519	52,623
2010	**5,315**	**9,118**	**32,067**	**10,094**	**56,594**

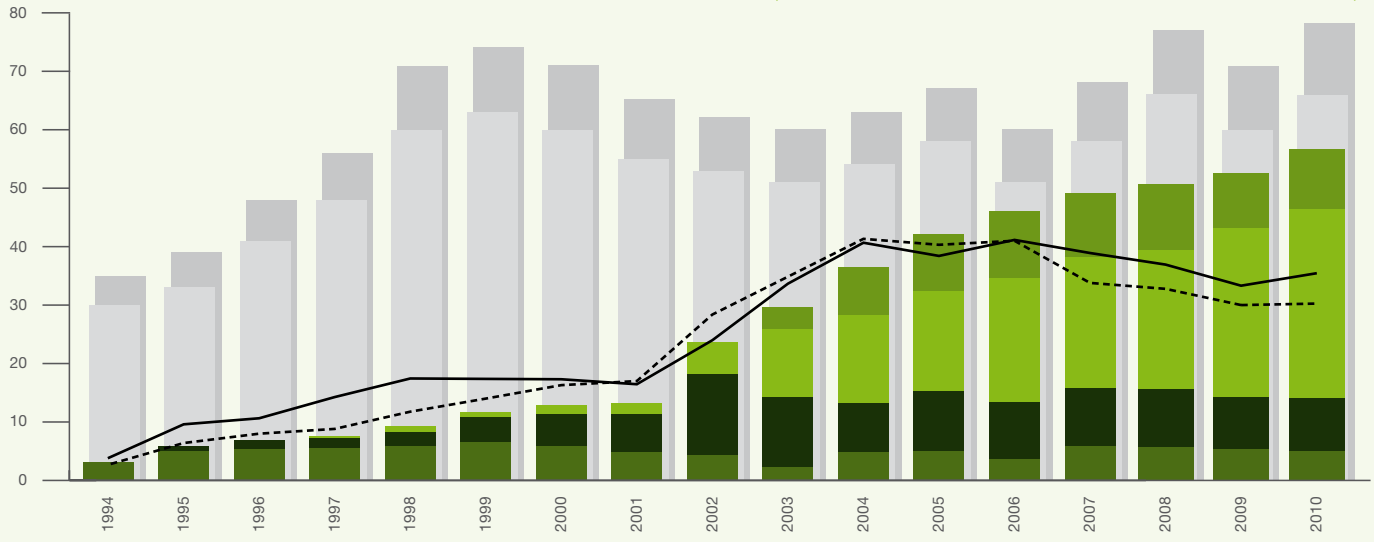
By divisions (in tonnes)	2009	**2010**
Office electronics/information technology/ security technology	24,994	**26,950**
Consumer electronics/music	25,841	**27,403**
Communications	1,624	**2,066**
Photographic equipment	74	**73**
Dental equipment	90	**102**
Total	52,623	**56,594**

By divisions (in %)	**2010**
Office electronics/ information technology/ security technology	47.6
Consumer electronics/ music	48.4
Communications	3.7
Photographic equipment	0.1
Dental equipment	0.2

Expenditure, income and quantity growth

In 1,000 tonnes
and million Swiss francs

2003: Time of import/2010: Time of disposal
Average age of electronic equipment: 8 years



Imported quantities in 1,000 tonnes

- Average quantity imported by Convention signatories
- Imports (effective)

Quantities taken back in 1,000 tonnes

- 9% Manufacturers
- 16% Retailers
- 57% Collection points
- 18% Companies

Expenditure and income in million Swiss francs

- Expenditure (2010: 30,4)
- Income (2010: 35,6)

Recycling rate

The Environmental Commission is budgeting for growth of approximately 5% in 2011, corresponding to an expected recycling amount of 60,000 tonnes of electronic waste.
Given an average equipment lifespan of eight years, the quantity collected in 2010 is compared with the quantity imported in 2002/2003. In this comparison, the proportion taken back in relation to the quantity imported eight years ago is around 95%.
Approximately 57% of the total quantity is collected via official SWICO collection points. There are roughly 650 such points in Switzerland.
On average, 49 tonnes a year or 4 tonnes per month are collected at these points, which are open an average of three days a week, giving a total of 300 kilograms per day.

Balance sheet as of 31 December 2010 (in 1,000 Swiss francs)

Assets	2009	2010
Liquid assets	12,355	**13,479**
Accounts receivable	2,885	**2,614**
Accruals/deferrals	275	**359**
Financial assets	23,250	**28,590**
Total assets	38,765	**45,042**

Liabilities	2009	2010
Accounts payable	4,883	**4,894**
Deferred liabilities	2,104	**2,673**
Short-term reserves	360	**868**
Latent waste disposal obligation	31,418	**36,607**
Total liabilities	38,765	**45,042**

Profit and loss account (in 1,000 Swiss francs)

Income	2009	2010
Advance Recycling Fees		
A signatories	9,557	**8,720**
B signatories	22,809	**26,844**
Other income	21	**12**
Financial income	939	**54**
Total income	33,326	**35,630**

Expenditure	2009	2010
Staff costs	745	**757**
Recycling	12,695	**12,012**
Transport	8,817	**8,384**
Collection points	3,746	**4,169**
Disposal of packaging	1,716	**2,622**
Disposal of batteries	622	**690**
Del credere on accounts receivable	–	**–**
Audits, analyses, PR, operating expenses	1,757	**1,205**
Endowments		
Securities reserve for fluctuations	–200	**600**
Latent waste disposal obligation	3,428	**5,191**
Total expenditure	33,326	**35,630**

Balance sheet

The balance sheet total increased by more than CHF 6 million compared with the previous year as a result of the increase in the latent waste disposal obligation.

On the assets side, liquidity remained virtually unchanged, while the surplus (increased waste disposal obligation) is reflected in an increase in financial assets. The financial assets are booked as at 31 December 2010 at market rates. A reserve for fluctuations of 10% of these values is taken into account.

As at the end of 2010, the latent waste disposal obligation was CHF 35.6 million, which corresponds to 122% of the recycling expenditure for 2010.

Income

Turnover rose by CHF 2.3 million compared with the previous year, to CHF 35.6 million. The additional income reflects the addition of new signatories and increased sales per unit in certain areas.

As of 1 January 2011, the ARF was lowered by an average of 15%.

Expenditure

On the expenditure side, higher expenditure for disposal of packaging (which returned to almost the 2008 level) was partly offset by lower transport costs. As a result of the higher holdings of securities, the reserve for fluctuations was increased by CHF 0.6 million. The latent waste disposal obligation was increased by CHF 5.1 million.

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“Recycling is the future. And recycling has a future. Because there will always be waste.”

Sven Wunderli, 17, has been an apprentice recycler at Immark AG in Regensdorf since 2009. He will complete his training with a Swiss Federal VET Diploma as a recycler in 2012.

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