

Household Water Treatment and Safe Storage Implementation Case Study: Piyush Chlorine

ENVIRONMENT AND PUBLIC HEALTH ORGANIZATION (ENPHO), NEPAL

Introduction

Established in 1990, ENPHO is a leading indigenous NGO in Nepal. They contribute to sustainable community development through the development, demonstration, and dissemination of appropriate technologies such as various HWTS options (e.g. chlorine, SODIS, ceramic filters, biosand filters, and arsenic mitigation), and sanitation technologies.

In 1994, ENPHO responded to a cholera epidemic among the Bhutanese refugees living in rural Eastern Nepal. After an initial site assessment, they concluded that chlorine was the most appropriate option and provided it to the refugees.

Realizing that the chlorine solution has enormous potential for wider use in the general population, ENPHO began to sell it as a commercial product from its office and in some pharmacy shops in Kathmandu. The product is registered with a brand name “Piyush”, which is a Sanskrit word meaning “drinks of the gods”.



Creating Demand

From 1994 until 2000, due to lack of donor and government support, ENPHO sustained Piyush promotion activities from its own internal budget, estimated at 8000-10,000 NRs per year (US\$120/year). ENPHO could only afford to print some leaflets, and told others about Piyush by incorporating it as part of other training workshops of hygiene and sanitation programs. Piyush had a low profile in the market.

Starting from 2000, ENPHO started to attract increasing donor funding for HWTS promotion. This allowed them to:

- Develop additional information, education, and communication materials on Piyush
- Conduct awareness training to various schools, community associations, health clinics, and local governments
- Promote Piyush through mass media, exhibitions, and conferences

The intensity of HWTS promotion activities gained traction after 2006, when the government of Nepal, together with a number of international and national development agencies, collaborated to generically promote various HWTS options throughout the country, including boiling, SODIS, filtration, and chlorination.

Supplying Products and Services

Piyush is currently produced at ENPHO. Commercially available liquid bleach is purchased from the market, tested at ENPHO laboratory for its chlorine concentration, and diluted to achieve 0.5% chlorine concentration. ENPHO packages the solution in 60 mL bottles which are labelled, sealed, and dated. Each bottle can treat 400 litres of water, sufficient to meet the drinking water demand of an average family of 4 to 5 person for 1 to 2 months.

Previously, ENPHO tried to produce Piyush by an electric-powered chlorine generator, using salt (sodium chloride) as an ingredient. However, electricity is highly unreliable and expensive in Kathmandu, and the resulting chlorine solution degraded quickly. Therefore ENPHO prefers the current process of diluting liquid bleach.

The normal production capacity is about 2,000 bottles per day, but can reach to over 5,000 bottles by operating an extended schedule and using extra human resources. ENPHO manufactures Piyush on demand, and can fill an order within a few days.

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Piyush is sold by ENPHO through two distinct channels. First, about 40% of the product is sold in bulk directly to institutional buyers such as UNICEF, other NGOs, or community groups, for mostly emergency response. The 12 NRs (US\$0.15) wholesale price barely covers the cost of raw material and labour, with no profit margin.

The second channel is through pharmacies and retail shops. Prior to 2000, ENPHO sold Piyush directly to a few pharmacies. In 2001, ENPHO signed an agreement with New Loyal Medicine Distributor, one of the largest medical suppliers in Kathmandu, to exclusively sell Piyush through their network of regional distributors, and 800+ pharmacies and some retail shops within the Kathmandu Valley. The wholesale price from 2001 to 2009 was 12 NRs per bottle. The retail price during the same period had been 17 NRs per bottle. The 5 NRs profit margin is shared among the supply chain actors.

From 2009, ENPHO started to use Nepal CRS Company as a super-distributor because of its wider networks that can reach the entire country. To pay the extra transportation cost, Nepal CRS requires an 8 NRs margin to be shared among the supply chain, resulting in a standard 20 NRs cost to consumers across the country.

Monitoring and Improvement

ENPHO has an on-site accredited laboratory to test the chlorine solution to ensure product quality control, and to conduct research and product development.

Program Financing

ENPHO is dependent on external funding to support their promotion and education activities, and is vulnerable to funding fluctuation. They do not earn a profit margin from Piyush, and ENPHO is reluctant to raise the price due to intense competition from other chlorine products.

Competition

In 2005, Centres for Diseases Control (CDC) and Population Services International (PSI) of USA, introduced a rival chlorine solution, branded as WaterGuard in Nepal. WaterGuard is manufactured in Nepal by a

bottled water company, and is sold in 250 mL bottle at a retail price of 35 NRs.

During the first two years, PSI implemented a large-scale social marketing campaign. They used mass media communications (e.g. advertisements on TV and radio), put up billboards throughout the city, and gave away free samples of WaterGuard to both households and institutional buyers.

On the one hand, WaterGuard expanded the market and achieved remarkable sales of more than 500,000 bottles (including free distribution) during this time. On the other hand, WaterGuard took away some customers who previously purchased Piyush. In particular, during 2005-2006, institutional buyers did not purchase Piyush as they could obtain WaterGuard for free or at nominal costs. WaterGuard took 80-90% of the market share of chlorine solution sales in Nepal by the end of 2006.

Yet, ENPHO, as a local NGO, lacked the capacity and resources to compete with CDC/PSI. They responded by negotiating a short-lived strategic alliance with PSI to promote Piyush and WaterGuard in parallel. In 2007, funding to PSI was terminated, and the sales of WaterGuard decreased.

In 2008 and 2009, ENPHO obtained some funding from Academy for Educational Development (AED) to promote Piyush and to build up ENPHO's social marketing capacity. Together with the government's initiatives to promote HWTS in general, sales of Piyush surged to over 300,000 bottles by 2009. Their market share of chlorine solution improved to over 40%.

Challenges to Scale Up

1. Chlorine as medicine. Because Piyush is sold mostly through pharmacies, the product is often seen as a medicine to be used temporarily, during the rainy season when the water is visibly more dirty, or when episodes of cholera or other water-borne diseases are becoming prominent in the daily news.
2. Competition. Many types of water treatment options, such as WaterGuard, ceramic filters, SODIS, boiling, are readily available in the market.

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3. Funding support. ENPHO is vulnerable to fluctuations in donor funding.
4. Low interest among shopkeepers to sell Piyush. Because the margins given to Piyush distributors and retailers are very thin and the sales volume are low (e.g. a few bottles per month per shop), some shops are not interested to carry Piyush, and many are reluctant to display Piyush at more prominent positions within the shops.
5. Lack of product certification. Despite asking for years, ENPHO has never been able to obtain government certification of the effectiveness of Piyush for water treatment (neither did WaterGuard). Some medical doctors and local professors in Nepal claim that chlorine causes cancer, so some people are scared of using the product. It is believed that certification can improve the image of Piyush among potential buyers (both households and institutional), and can assist ENPHO in attracting donor funding.



Piyush promotion billboards in Kathmandu city



ENPHO's Piyush bottle labelling

References

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Further Information

ENPHO: www.enpho.org

CAWST, Centre for Affordable Water and Sanitation Technology
Calgary, Alberta, Canada
Website: www.cawst.org Email: cawst@cawst.org
Wellness through Water.... Empowering People Globally
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