IL PROBLEMA DELL' ACQUA

La qualità e la quantità delle risorse idriche mondiali diminuiscono e si degradano anno dopo anno con il progredire dello sviluppo industriale e con l'aumento della popolazione.

Sempre più spesso si verificano situazioni nelle quali la stessa acqua viene riutilizzata più volte, subendo più trattamenti per renderla idonea di volta in volta alle necessità del momento.

Il livello generale di degrado delle risorse, la necessità di riciclare più volte la stessa acqua, le strutture per il trattamento e la distribuzione spesso obsolete ed inadatte, non consentono più di avere garanzie adeguate sulla qualità dell'acqua comunemente disponibile per usi potabili.

Una indagine effettuata negli U.S.A. dai massimi organismi competenti in materia sulle caratteristiche medie delle acque potabili ha portato alla seguente conclusione:

"L' ACQUA DEL RUBINETTO NON PUÒ PRESUMERSI COMPLETAMENTE INNOCUA PER L'ORGANISMO".

La scienza, con l'aiuto di sempre più sofisticati metodi e strumenti diagnostici, ha rilevato che una quota apprezzabile di tumori e malattie cardiovascolari è imputabile al degrado ambientale relativo all'aria e all'acqua.

In questa sede vengono esaminati i principali problemi di degrado delle acque.

La allegata tabella A indica quali sono questi problemi classificandoli in tre grandi gruppi:

A) MICROBIOLOGICI
B) CHIMICI
C) ESTETICI

A) CONTAMINAZIONE MICROBIOLOGICA

L'inquinamento microbiologico è causato dalla presenza di diversi microrganismi proliferanti in acqua e nocivi per l'organismo umano.

Questi microrganismi si possono classificare in tre gruppi:

— Virus	dimensioni	< 0.03 micron
— Batteri	»	> 0.40 micron
— Protozoi	»	> 1.00 micron

Questo tipo di contaminazione deriva primariamente dagli scarichi biologici delle reti fognanti che si immettono nelle acque di superficie o che si disperdono nel sottosuolo, spesso senza alcun trattamento preventivo.

Il diffondersi della contaminazione batterica è una inevitabile conseguenza della espansione, spesso incontrollata, degli insediamenti abitativi ed assume dimensioni preoccupanti nei paesi ad elevata densità di popolazione come il nostro.

Solo in questi ultimi dieci anni si è cominciato a costruire i primi impianti di depurazione delle acque di fogna a livello di Comuni.

Tali impianti, peraltro, non sempre svolgono in modo efficace la loro funzione, talvolta per l'insufficienza del progetto e più spesso per l'inadeguatezza della gestione.

Vi sono, comunque, molte località nel nostro Paese, soprattutto turistiche, con attrezzature inadeguate, se non inesistenti, che si affidano ancora al sistema delle fosse biologiche più o meno a tenuta stagna, con immaginabili conseguenze sull'ambiente.

B) CONTAMINAZIONE CHIMICA

L'inquinamento per la presenza di sostanze chimiche nell'acqua è purtroppo uno dei grandi problemi emergenti nelle nazioni più progredite.

Negli ultimi due decenni le sempre crescenti esigenze dell'industria e dell'agricoltura, in continuo sviluppo, hanno portato alla scoperta e produzione di oltre 500.000 nuove sostanze.

In genere si tratta di sostanze derivate da idrocarburi (plastiche, pesticidi, erbicidi ecc.) per lo più non biodegradabili e quindi accumulabili nel tempo.

Molte di queste sostanze oltre certi limiti sono classificate come tossiche per l'organismo, e la loro pericolosità può aumentare quando si combinano con le sostanze comunemente presenti nell'acqua.

Laddove queste nuove sostanze sono usate, è inevitabile che esse finiscano per contaminare le acque superficiali e le falde sotterranee, attraverso gli scarichi industriali e le irrorazioni agricole.

Questa è purtroppo storia di tutti i giorni.

È pertanto ragionevole prevedere che tracce più o meno consistenti di queste sostanze possano essere presenti nelle acque prelevate per essere destinate all'uso alimentare; e che quindi possano combinarsi con il cloro, comunemente immesso negli acquedotti per l'eliminazione della contaminazione batterica, formando una serie di idrocarburi e composti organici clorurati considerati dannosi alla salute.

Tra questi meritano una menzione il TCE TRICLOROETILENE e i THM TRIALOMETANI.

Il primo è un solvente clorurato molto usato nell'industria meccanica per il lavaggio di particolari metallici dopo le lavorazioni meccaniche.

La sua presenza nelle acque è andata fortemente aumentando negli ultimi anni per l'estendersi dell'uso e per la non biodegradabilità e conseguente accumulo nel tempo.

Sono ormai ben noti i danni che esso procura al fegato ed i disturbi conseguenti alla esposizione ai suoi vapori (nausea, svenimento, debolezza, paresi facciale); poco si sa ancora sulle probabili proprietà mutagene e teratogene conseguenti alla tendenza dimostrata a combinarsi con il DNA.

I trialometani sono degli idrocarburi alogenati che combinandosi con il cloro formano cloroformio, sostanza considerata promotrice della cancerogenesi.

Fra i contaminanti più pericolosi per l'organismo annoveriamo l'AMIANTO ed il MERCURIO, due sostanze molto diffuse.

L'amianto è generalmente presente nell'acqua sotto forma di particelle in sospensione, le cui ridottissime dimensioni (<1 micron) ne rendono difficile l'individuazione, possibile solo con strumenti sofisticati.

Molto diffuso in natura nelle sue diverse forme, è considerato un attivo promotore di alcune forme di tumore polmonare, in conseguenza della inspirazione delle sue polveri.

Pur non essendo ancora ben note le eventuali conseguenze dell'ingestione di particelle d'amianto, è comunque consigliabile provvedere alla sua eliminazione totale dell'acqua potabile.

Il mercurio, anch'esso diffuso in natura, può essere presente in acqua soprattutto come composto organico, il mercurio metile, considerato fortemente mutageno anche in basse concentrazioni.

Infatti questa sostanza, al contrario di altri contaminanti che si distribuiscono uniformemente, tende a concentrarsi in ristrette zone d'accumulo e in concentrazioni locali imprevedibili.

È importante sottolineare che pur essendo ormai accertata la tossicità di sostanze come quelle citate, e pur essendo conosciuti i disturbi immediati provocati da esse nell'organismo, poco si sa invece sugli effetti cancerogeni, mutageni, teratogeni conseguenti al prolungato contatto con esse.

Infatti, i tempi lunghi di evoluzione dei fenomeni legati alla cancerogenesi e alla mutagenesi, e la relativamente recente sensibilizzazione della scienza verso questi problemi, non consentono di avere delle risposte prima di qualche decennio.

Al momento si può operare solo con ipotesi basate su modelli e similitudini che peraltro non consentono di valutare appieno la gravità del problema.

C) CONTAMINAZIONE ORGANOLETTICA

La qualità di un'acqua potabile è valutata, oltre alla sua composizione chimica, in base alla sua limpidezza, al suo odore e al suo sapore.

Queste caratteristiche fisiche vengono alterate dalla presenza nell'acqua di sostanze in sospensione o in soluzione.

Non sempre queste sostanze sono tutte dannose per l'organismo, tuttavia possono rendere l'acqua estremamente sgradevole per gli usi potabili ed alimentari per la presenza di odori e sapori cattivi.

È quindi altrettanto importante eliminare queste sostanze come il ferro o l'idrogeno solforato (tipico delle acque sulfuree) per restituire all'acqua da bere le sue buone qualità.

TABELLA A

PRINCIPALI PROBLEMI RELATIVI ALL'ACQUA POTABILE

1 - CHIMICI	2 - MICROBIOLOGICI	3 - ESTETICI
A) COMPOSTI ORGANICI - TRICLORETILENE (TCE) - ETERE DIISOBROMIDICO (EDB) - BIFENOLI POLICLORURATI (PCB) - TRIALOMETANI (THM) - IDROCARBURI ALOGENATI - PESTICIDI E ERBICIDI (ATRAZINA, SIMAZINA MOLINATE, ECC.) B) COMPOSTI INORGANICI - AMIANTO - PIOMBO E COMPOSTI - MERCURIO E COMPOSTI - CLORO E COMPOSTI C) COMBINAZIONI VARIE - METALLO - ORGANICI - ALTRI	A) VIRUS - POLIOMELITE (< 0.03 MICRON) - EPATITE A B) BATTERI - COLERA - SHIGELLA - SALMONELLA - ESCHERICHIA COLI C) PROTOZOI MAGGIORI (RESISTENTI A CLORO) - ENTEROAMEBA ISTOLITICA - GIARDIA LAMBLIA - VERMI ED ELMINTI (ASCARIDI, TRICORIDI)	A) ODORE - CLORO/COMPOSTI - IDROG. SOLFORATO (UOVA MARCE) - DECOMP. ORGANICA (MUFFE) - PETROLIO B) SAPORE - CLORO/COMPOSTI - FERRO - METALLI - TANNINO - ALCALI C) COLORE - FERRO - SCAGLIE - DETRITI - COLLOIDI - ALGHE

TABELLA B

CONSUMI D'ACQUA STIMATI PER LE PRINCIPALI UTENZE

UTENZA	LT / GIORNO
CONDOMINI	660/UNITÀ
ABITAZIONI	200/PERSONA
ALBERGHI	1.200/STANZA
RESIDENCE	200/PERSONA
OSPEDALI	1.000/LETTO
SCUOLE	100/STUDENTE
RISTORANTI	250/POSTO
CIRCOLI	200/SOCIO
INDUSTRIE (ESC. PROCESSI)	120/ADDETTO
UFFICI	80/IMPIEGATO
NEGOZI	6/MQ
CAMPI ROULOTTE	400/POSTEGGIO

I DATI INDICANO I CONSUMI TOTALI DI ACQUA PER USI ANCHE NON POTABILI.

I CONSUMI PER USI ALIMENTARI SONO CIRCA DEL 5% DEI CONSUMI TOTALI.

I SISTEMI DI TRATTAMENTO DELL'ACQUA

Oggi Il mercato offre un ampia gamma di dispositivi appartenenti al settore "Trattamento Acqua", operanti su diversi principi con risultati diversissimi.

In questa sede vengono considerati i principali sistemi di trattamento dell'acqua per uso alimentare, analizzandone le prestazioni, i vantaggi, gli svantaggi e gli eventuali difetti.

Le conclusioni di questa analisi sono raccolte in modo sintetico e comparativo nella Tabella C.

1) SCAMBIO IONICO

Gli apparecchi che adottano questo processo sono fra i più diffusi ed hanno la funzione di abbassare il grado di durezza dell'acqua riducendo la concentrazione di sali minerali contenutivi, limitandosi peraltro a questa sola operazione.

L'acqua demineralizzata o addolcita, pur essendo indicata per usi igienici, chimici e cosmetici, oggi non è consigliata per usi alimentari e potabili.

I sali minerali contenuti nell'acqua sono infatti necessari per il corretto svolgimento di alcune funzioni dell'organismo umano e la riduzione eccessiva delle concentrazioni può portare ad effetti controproducenti.

2) DISTILLAZIONE

Il processo di distillazione produce acqua chimicamente pressoché pura in quanto rimuove quasi tutte le sostanze in essa disciolte.

L'acqua distillata è praticamente insapore per la eliminazione totale dei sali minerali e di molte altre sostanze considerate fondamentali per la salute.

Infatti il bere usualmente acqua distillata provoca il deterioramento dei denti e la perdita di calcio e fosforo dalle ossa.

Inoltre la distillazione tende ad aumentare nell'acqua trattata la concentrazione di sostanze più volatili eventualmente presenti e spesso tossiche.

Dal punto di vista batterico, le temperature raggiunte e i tempi impiegati nel processo consentono di avere una azione battericida (non sempre), ma l'acqua distillata può essere esposta a ricontaminazione.

Infatti il trattamento, dati i tempi lunghi del processo, avviene per lotti e richiede quindi uno stoccaggio dell'acqua distillata in un serbatoio dove rimane stagnante e calda, ambiente ideale per la proliferazione batterica.

L'acqua distillata, pertanto, va considerata come un liquido da utilizzare solo per brevi periodi ed in situazioni di emergenza.

Dal punto di vista operativo questi sistemi sono in genere pesanti, ingombranti, di elevato costo di acquisto e di esercizio, richiedono energia, hanno una produzione giornaliera limitata (4-20 lt) e necessitano di una continua manutenzione, almeno per ricaricare l'acqua da trattare.

3) OSMOSI INVERSA

Il principio della osmosi inversa utilizza una membrana semipermeabile che consente il passaggio delle molecole dell'acqua e di altre molecole minori, mentre trattiene le impurità maggiori.

L'efficienza di questi sistemi è condizionata dalla pressione dell'acqua da trattare: maggiore è la pressione, migliore è la filtrazione; pertanto la qualità dell'acqua ottenuta non è costante al variare della pressione.

Infatti, a questo proposito, spesso necessitano di pompe ad alta pressione, non riuscendo ad operare con la pressione di rete.

L'osmosi inversa rimuove i sali minerali e addolcisce l'acqua, ma non elimina le sostanze organiche volatili, né i fenoli; inoltre non tutti i sistemi risultano efficaci contro i batteri.

Questi dispositivi sono ingombranti, costosi, a produzione giornaliera limitata (20/40 lt nei modelli domestici) e spesso rumorosi.

Infine essi non rendono tutta l'acqua in entrata, ma depurano una quantità pari al 25% del volume di acqua immesso, avviando allo scarico la parte eccedente.

4) RAGGI ULTRAVIOLETTI

Questi sistemi sfruttano la proprietà battericida dei raggi UV ed eliminano i batteri per irraggiamento dell'acqua da potabilizzare.

La loro azione, peraltro, è limitata solo alla funzione battericida e ovviamente non hanno alcuna efficacia contro gli inquinanti chimici e le impurità di varia natura.

Inoltre la loro efficacia è condizionata dalle condizioni di limpidezza dell'acqua e dalla pulizia dell'apparato.

Infine per il funzionamento richiedono energia ed il costo dell'elemento radiante è elevato.

5) OZONO

L'ozono è fondamentalmente una molecola di ossigeno sovraccaricata ($0_2 -> 0_3$) molto aggressiva e instabile.

I sistemi ad ozonizzazione hanno buone capacità battericide ma, come i sistemi UV, non sono efficaci contro sostanze chimiche e impurità.

6) SEDIMENTAZIONE

I sistemi a sedimentazione o sedimentatori trattengono ed eliminano dall'acqua materiali in sospensione quali sabbia, detriti, polvere, con dimensioni superiori ai 5 micron.

A parte questa funzione che ne fa degli utili accessori, essi non svolgono alcuna azione di purificazione da batteri o da inquinanti chimici.

7) CARBONI

I sistemi a carboni sono più propriamente definiti declorinatori per la loro azione di rimozione del cloro dall'acqua.

Essi non hanno alcuna capacità battericida propria e anzi in molti casi sono risultati promotori della proliferazione, e successivo rilascio nell'acqua trattata, di batteri patogeni.

Infatti l'azione di rimozione del cloro elimina nell'acqua l'ambiente letale per i batteri, e di conseguenza, è sufficiente un limitato numero di individui sopravvissuti alla clorinazione per avere una loro moltiplicazione in tempi brevi all'interno del sistema quando questo è inoperante.

I batteri si riproducono per separazione molto rapidamente con progressione aritmetica (2, 4, 8, 16,32...) e in teoria un solo individuo può generare in sole 16 ore oltre 3 miliardi di batteri.

I filtri a carboni eliminano torbidità, sapori e odori sgradevoli causati dal cloro, rendendo l'acqua apparentemente potabile e generando nell'utente una falsa sicurezza che non trova riscontro nella realtà.

8) CLORINATORI

Questi sistemi producono un effetto battericida mediante l'immissione nell'acqua di quantità di cloro prestabilite in un tempo predeterminato.

L'efficacia disinfettante del cloro è ben nota sebbene recentemente l'analisi di un campione di acqua proveniente da un acquedotto con problemi di contaminazione batterica, abbia rilevato la presenza contemporanea di batteri e di cloro residuo.

Oltre alle controindicazioni per la salute alla presenza del cloro nell'acqua, questi apparati presentano degli svantaggi dal punto di vista operativo: richiedono energia elettrica, necessitano di reagenti, sono dispositivi elettromeccanici e possono subire avarie non rilevate per mancanze di corrente o avarie dei dosatori.

TABELLA C

SISTEMI FILTRANTI/PURIFICATORI PER ACQUA

TIPO	VANTAGGI	SVANTAGGI
RAGGI ULTRAVIOLETTI	Efficaci contro i batteri quando efficienti e con acqua limpida. Portate alte. Consumo energia basso.	Inefficaci per sostanze chimiche e impurità. Non eliminano odori e sapori. Diminuzione di efficienza senza preavviso. Occorre energia.
DISTILLATORI	Eliminano i sali e altre sostanze chimiche. Efficaci contro i batteri quando usati appropriatamente. Idonei per emergenze e usi di laboratorio.	Possono concentrare gli elementi più volatili e tossici. Rimuovono i minerali essenziali per l'organismo. Occorre energia. Produzione bassa.
OSMOSI INVERSA	Riduce i sali disciolti tra cui nitriti, nitrati e fluoruri.	Bassa produzione, costo elevato, ingombrante, necessita di manutenzione e occorre energia.
CLORINAZIONE	Portate elevate, efficace contro i batteri se in piena efficienzza.	Inefficaci per inquinanti chimici, amianto, polveri. Possono indurre sostanze ritenute dannose. Danno all'acqua sapore e odore sgradevoli. Il cloro dovrebbe essere rimosso prima dell'uso dell'acqua.
CARBONI	Di solito poco costosi, rimuovono il cloro e alcuni sapori e odori sgradevoli.	Possono favorire la proliferazione senza controllo di batteri. Eliminano solo i sintomi fisici di inquinanti senza eliminare gli stessi.
CARBONI BATTERIOST. (CONTENGONO PESTICIDI)	Possono fermare la crescita dei batteri nel carbone o carbone attivo se tutto è regolare.	Inefficaci contro gli inquinanti chimici, non eliminano di norma cisti, amianto e microparticelle. L'efficienza diminuisce senza alcun segnale.
SISTEMI COMPOSTI	**Eliminano i batteri, cisti, cloro e composti organici, fenoli, idrocarburi alogenati, altre sostanze chimiche senza trattenere i minerali essenziali, odori e sapori sgradevoli. Portate relativamente alte, costi iniziali e di gestione limitati, affidabili, segnalano la riduzione di efficienza.**	Necessità di sostituire la cartuccia. Capacità limitata di rimuovere H_2S. Non rimuovono i composti ammoniacali.

IL PURIFICATORE SEAGULL IV

APPROVATO DAL MINISTERO DELLA SANITÀ (PROT. N. 400,4/18.16/169)

A - COME FUNZIONA

Il purificatore SEAGULL IV opera sinergeticamente in quattro modi per purificare l'acqua.

1) Trattiene fisicamente, mediante microfiltrazione, particelle e organismi con dimensioni >0.4 micron presenti nell'acqua. Per avere un'idea delle dimensioni basta considerare che la lunghezza di un globulo rosso e 7 micron. L'importanza della capacità filtrante a 0.4 micron (matrice filtrante da 0.1 micron) emerge quando si osserva che le dimensioni dei batteri patogeni variano in diametro da 0.5 a 2.0 micron, ed in lunghezza da 1.0 a 8.0 micron. SEAGULL IV, pertanto, ha la capacità filtrante tale da rimuovere i batteri patogeni senza necessità di reagenti chimici o amianto.
2) Esso mantiene i batteri in un ambiente letale, per assenza di sostanze nutritive, promuovendo un'azione battericida che elimina, oltretutto, il pericolo di proliferazione notturna dei batteri, come nei filtri a carboni.
3) Negli elementi componenti la matrice absorbente, vengono indotte permanentemente cariche + e - che aiutano la rimozione di particelle e colloidi di carica opposta ancora più piccole di quelle trattenute per microfiltrazione. Pertanto la miscela filtrante media risultante è in grado di trattenere particelle più piccole rispetto ad altri eventuali filtri a densità simile.
4) Inoltre rimuove, per absorbimento, numerose sostanze chimiche quali: cloro ed i suoi composti organici, erbicidi, pesticidi, benzine ed olii, detergenti e tracce di ferro e idrogeno solforato. Le proprietà absorbenti della matrice coprono un ampio spettro di dimensioni molecolari e quindi di sostanze chimiche. I minerali naturali, essenziali alla salute e alle buone qualità dell'acqua, passano inalterati attraverso SEAGULL IV.

B- CHE COSA FA

Per quanto ci risulta, il PURIFICATORE SEAGULL IV è l'unico dispositivo in grado di purificare in un campo vasto come quello suddetto.

La vera sinergia nasce dall'azione simultanea della microfiltrazione, dell'absorbimento di elevata efficacia, e dalla azione delle cariche indotte.

SEAGULL IV è in grado di fornire acqua potabile rispondente e superiore alle norme batteriologiche del Servizio Sanità Pubblica degli U.S.A. trattando virtualmente qualsiasi acqua considerata idonea ad essere trattata, secondo gli standards dello stesso ente.

Il dispositivo può rimuovere piccole quantità di ferro e idrogeno solforato (2 ppm), ma questo naturalmente riduce la durata della cartuccia; per quantità maggiori si consiglia un pretrattamento.

In parole povere, SEAGULL IV rende potabile l'acqua di qualsiasi origine non salata trattabile; il buon senso, comunque, consiglia di utilizzare sempre la migliore fonte a disposizione.

Di seguito vengono analizzati i principali inquinanti che vengono rimossi con il SEAGULL IV.

BATTERI

Il SEAGULL IV è progettato per eliminare le quattro famiglie di batteri patogeni generati in acqua che possono contaminare l'acqua potabile: Colera, Salmonella, Shigella, Escherichia Coli.

Fortunatamente queste quattro famiglie hanno dimensioni superiori a 0.4 micron e sono le uniche famiglie di batteri acquatici patogeni conosciute.

Il più noto della famiglia della Salmonella è la Salmonella Typhosa che provoca la febbre tifoidea.

Il Colera è ben noto per le grandi epidemie che colpirono l'Europa nel Medio Evo.

La Shigella provoca disturbi fastidiosi ma non letali quali vomito, diarrea ecc.

L'Escherichia Coli è un battere che vive nell'intestino di animali a sangue caldo e si trasmette con le feci e per questo motivo viene preso quale indicatore del grado di inquinamento biologico dell'acqua.

Le norme E.P.A. (Min. Prot. Ambiente U.S.A.) relative alla purificazione dei batteri, per classificare come "purificatore" un dispositivo, impongono allo stesso la rimozione di pesanti concentrazioni batteriche (200.000 coli/ml) per tutta l'autonomia dichiarata.

Per capire la severità della norma, si pensi che il limite massimo accettato dalle stesse Autorità Sanitarie per avviare un'acqua al trattamento è di 200 coli/ml.

Il SEAGULL IV ha superato più volte questo test in diversi momenti e in diverse Nazioni.

CLORO E FLUORO

I risultati di recenti studi hanno indicato che il cloro non dovrebbe essere ingerito.

Infatti, come già detto in altra parte di questa breve nota, esso è oggi considerato una delle principali cause di alcune malattie cardiache e componente base di sostanze ritenute promotrici della cancerogenesi.

Il cloro viene prontamente ed efficacemente rimosso con il SEAGULL IV.

Esso elimina anche il fluoro, ma non i floruri, come il floruro di sodio, considerati essenziali per la prevenzione delle carie dentali; questa è quindi una caratteristica positiva del procedimento SEAGULL IV.

SAPORE, ODORE, COLORE

Molti sapori, odori e colori sgradevoli di alcune acque sono una conseguenza di decomposizioni di sostanze organiche o di un trattamento inadeguato (lo stesso cloro induce un sapore e un odore sgradevole).

SEAGULL IV è particolarmente efficace nell'eliminare questi difetti, ripristinando le caratteristiche proprie di sapore, assenza di odore e di limpidezza dell'acqua.

METALLI TOSSICI

Alcuni metalli sono essenziali per il metabolismo dell'organismo umano, mentre altri possono essere molto tossici come il Cadmio, il Piombo e il Mercurio.

Il SEAGULL IV si è dimostrato particolarmente efficace nel trattenere tracce (ppb) di molti metalli tossici, grazie al suo ampio spettro di absorbimento e alle cariche elettrostatiche indotte, come è emerso da uno studio effettuato dai laboratori E.P.A. con il metodo dell'absorbimento atomico.

INQUINANTI ORGANICI

Il SEAGULL IV è di gran lunga il più efficiente prodotto esistente per rimuovere inquinanti organici dalle acque, nelle concentrazioni comunemente riscontrate (ppb).

Numerose prove sono state effettuate su diversi composti: TCE Tricloroetilene, PCB Bifenolo policlorurato Dicloroetano, Etere Disopropilico, Tetracloruro di Carbonio, Trialometani.

Ulteriori prove hanno dimostrato l'efficacia del dispositivo nel trattenere pesticidi ed erbicidi quali: DDT, DDD, DDE, Benzolo, ecc.

In queste prove partendo da una concentrazione di 100 ppb, si è ottenuto un abbattimento della stessa e qualche decimo di ppb.

PROTOZOI PATOGENI E PARASSITI

Le uova e le cisti di protozoi e vermi parassiti vengono diffusi nell'ambiente attraverso le feci, e possono entrare in contatto con le risorse idriche.

Poiché questi organismi resistono all'azione disinfettante del cloro, spesso sopravvivono al trattamento normalmente effettuato negli acquedotti.

Questi parassiti si riproducono nell'organismo umano e possono provocare malattie gravi e talvolta croniche.

Tra questi il più noto è l'Enteroameba Istolitica responsabile della dissenteria amebica.

Questi microrganismi e vermi hanno dimensioni molto grandi rispetto ai batteri, variando da 3 a 5 micron e oltre, e sono totalmente trattenuti dal SEAGULL IV mediante la microfiltrazione.

AMIANTO E ALTRE SOSTANZE PARTICELLARI

Particelle molto fini di sostanze di origine minerale ed organica sono spesso presenti in alcune acque e possono, mediante l'absorbimento, favorire il trasporto di sostanze tossiche e microrganismi patogeni.

Tra queste la più temuta è l'amianto, che ormai viene strettamente collegato con la cancerogenesi nelle sue diverse forme, tra le quali quella polmonare.

Severe prove effettuate presso la Hokkaido University in Giappone, mediante il microscopio elettronico analizzatore, hanno dimostrato che SEAGULL IV trattiene fibre e particelle di dimensioni fino a 0.4 micron in modo pressoché totale (oltre il 99,9999%).

Anche il fallout radioattivo è efficacemente eliminato dal SEAGULL IV poiché è trattenuto sulla superficie di particelle con dimensioni minime inferiori a 1 micron.

C - CHE COSA NON FA

Il purificatore SEAGULL IV non è un addolcitore o decalcificatore dell'acqua e quindi non trattiene i sali. (In chimica i sali si riconoscono per la desinenza -ito, -ato, -uro).

Esso quindi non è un desalinatore per acqua di mare; non riduce il grado di durezza dell'acqua se non in modo trascurabile ed occasionale; non trattiene i sali minerali essenziali per l'organismo e per le buone qualità dell'acqua.

Pur essendo oggi il più versatile ed efficace prodotto del settore, SEAGULL IV non è stato studiato per la depurazione di acque di fogna o di scarichi industriali.

MODULARIO SANITÀ 5

MOD. 7 - U G.

Roma, 30 GEN 1991 19

Ministero della Sanità

DIR.GEN.SERV.IG.PUBBL. - DIV.IV^

N.° 400.4/18.10/169

OGGETTO: **Richiesta di approvazione per l'immissione in commercio di apparecchiature per il trattamento domestico di acque potabili: SEAGULL IV ed altre apparecchiature con stessi principi e materiali e diverse potenzialità di esercizio.**

E' stata esaminata la documentata richiesta di cui all'oggetto, inoltrata da codesta Società.

Questo Ministero ritiene di poter approvare l'apparecchiatura in questione, ai sensi dell'art. 5, paragrafo 3, del D.M. 21/12/1990, n. 443 pubblicato nella G.U. n. 24 del 29/01/1991.

L'immissione sul mercato e l'impiego dell'apparecchiatura di cui all' oggetto, destinata al trattamento domestico dell'acqua potabile, con particolare riferimento all'eliminazione di sostanze in sospensione ed alla riduzione di eventuali sostanze organiche presenti, dovranno effettuarsi nel rispetto puntuale delle condizioni di carattere generale e di carattere speciale - per la tipologia specifica dell'apparecchiatura in questione -, indicata nel predetto decreto.

IL MINISTRO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 12 1978

OFFICE OF ENFORCEMENT

Honorable Richard T. Schulze
House of Representatives
Washington, D.C. 20515

Dear Mr. Schulze:

This is in response to the meeting held on September 11, 1978, attended by your staff, representatives of the Environmental Protection Agency (EPA), your constituent, Mr. Richard T. Williams, President, General Ecology, Inc. and his Attorney, Mr. Ernest G. Wilson, concerning his product, the SEAGULL IV water purifier. During the meeting, a number of points were discussed and an understanding was reached between Mr. Williams and EPA. Those points, briefly are:

1. SEAGULL IV is a device and is not required to be registered. It is, however, subject to regulation by the EPA under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended.

2. EPA tests on SEAGULL IV have shown that this product is a water purifying device in accordance with the Interim Standards for Water Purifiers (enclosed). Specifically it meets the requirements of this document in the following respects:

    a. The silver concentration in the drinking water does not exceed the maximum level of 50 parts per billion allowed for potable water.

    b. It meets the standards for providing microbiologically potable water under stringent conditions against Escherichia coli.

3. The EPA does not approve or endorse any pesticide or device. Any statement directly or indirectly implying that a pesticide or device is recommended or endorsed by any Agency of the Federal Government constitutes misbranding, which is a violation of FIFRA.

4. A copy of this letter will be sent to all 10 EPA Regions.

Thank you for the opportunity to meet with Mr. Williams. If I can be of further assistance, please let me know.

Sincerely yours,

A. E. Conroy II, Director
Pesticides and Toxic Substances
Enforcement Division

Enclosure

UNIVERSITÀ DEGLI STUDI DI ROMA
"LA SAPIENZA"
DIPARTIMENTO DI CHIMICA

00185 Roma, Piazzale Aldo Moro, 5 - Tel. 4951751 - 4958251

22·12·89

Come da relazione allegata, i sottoscritti Proff. Antonio Di Corcia e Roberto Samperi del dipartimento di Chimica dell'Università "La Sapienza" di Roma hanno eseguito esperimenti per accertare la capacità del dispositivo "Seagull IV" di bloccare pesticidi da acqua potabile.

In base a questi esperimenti, i sottoscritti dichiarano che, anche dopo il passaggio attraverso il suddetto dispositivo di 5000 litri d'acqua artificialmente contaminata a livello di 5 µg/L con ognuno dei seguenti pesticidi: cloridazon, simazina, monuron, atrazina, diuron, propanil, linuron, molinate, l'acqua in uscita dal dispositivo "Seagull IV" non conteneva quantità rivelabili (il limite di rivelabilità del metodo analitico era di 0.002-0.011 µg/L) di ciascuno dei pesticidi considerati.

In fede

Antonio Di Corcia, Roberto Samperi

Antonio Di Corcia Roberto Samperi

Valutazione della capacità del dispositivo "Seagull IV" di sottrarre contaminanti organici nel passaggio attraverso esso di grandi quantità di acqua

Procedimento Sperimentale. L'apparato usato consisteva di:

- 2 recipienti da 50 L ciascuno.
- 1 pompa che forzava il passaggio dell'acqua attraverso il filtro.
- 1 recipiente d'acciaio che racchiudeva il filtro e fornito di un ingresso ed una uscita per l'acqua. Per questi esperimenti, i recipienti erano periodicamente riempiti con acqua di rubinetto a cui veniva aggiunto 2 g di solfito di sodio per 50 L di acqua, allo scopo di evitare l'ossidazione dei pesticidi aggiunti successivamente. Dopo di che, 0.57 mL di una soluzione metanolica contenente 8 pesticidi in conc. pari a 0.16 mg/mL venivano aggiunti a 50 L di acqua. La concentrazione risultante in acqua di ogni pesticida era di 5 µg/L. I pesticidi furono selezionati in base ai criteri della loro popolarità in Italia, della loro mobilità e persistenza in acqua. I pesticidi prescelti furono: cloridazon, monuron, simazina, atrazina, diuron, propanil, linuron e molinate. Dopo la

preparazione del campione d'acqua, questo era forzato a passare il filtro per mezzo di una pompa. Ogni 1000 L di acqua passati attraverso il filtro, 2 aliquote di 2 L ciascuna di acqua erano analizzate per determinare l'eventuale presenza dei pesticidi aggiunti nell'acqua filtrata. A scopo di paragone, periodicamente erano analizzate aliquote di 2 L di acqua raccolte immediatamente prima del passaggio di questa attraverso il filtro.

Procedimento di analisi. Il procedimento analitico per il monitoraggio dei pesticidi nell'acqua era basato su:

- estrazione in fase solida dei pesticidi per mezzo di una cartuccia contenente 250 mg di carbon black grafitizzato (GCB).
- 2 litri di acqua erano forzati a passare attraverso la cartuccia inserita in un apparato da vuoto fatto con una pompa ad acqua.
- Ri-estrazione dalla cartuccia di GCB dei pesticidi intrappolati mediante passaggio di 1.5 mL di metanolo seguiti da 6 mL di cloruro di metilene/metanolo (95:5, v/v).
- Concentrazione dell'estratto a 0.5 mL per evaporazione dei solventi a 27°C in bagno d'acqua

sotto un flusso di azoto.

- Introduzione di 40 uL dell'estratto concentrato in cromatografo liquido comprendente una colonna di C-18 (5 um) di 25 cm x 4.6 mm i.d. I pesticidi erano rivelati per mezzo di un rivelatore UV posto a 220 nm.

La colonna operava in fase inversa e con gradiente di eluizione. La composizione iniziale era: 35% di acetonitrile che, linearmente, era portato al 60% in 20 min.

Il calcolo delle concentrazioni in acqua dei pesticidi era fatto paragonando le loro altezze dei picchi con quelle ottenute iniettando 40 µL di una soluzione ottenuta diluendo 100 volte lo standard di lavoro contenente gli otto pesticidi e aggiungendo 50 µL di questa soluzione diluita a 0.5 mL di una soluzione acqua/metanolo.

Anche dopo il passaggio di 5000 L di acqua, i campioni d'acqua esaminati non contenevano apprezzabili quantità di ciascuno degli 8 pesticidi aggiunti all'acqua prima del passaggio attraverso il filtro. Il limite di rivelabilità del procedimento analitico era rispettivamente di:

0.003 µg/L per cloridazon; 0.002 µg/L per simazine; 0.003 µg/L per monuron; 0.002 µg/L per atrazine; 0.007 µg/L per diuron; 0.006 µg/L per propanil; 0.004 µg/L per linuron; 0.011 µg/L per molinate.

UNITA' SANITARIA LOCALE RM/1

C. F. 04775720586

1ª Circoscrizione - Comune di Roma

Tel. 73.21.85 - 73.07.76 - 73.15.936 - 73.12.201

00185 ROMA Via Ariosto 3/9

30/5/88

COMUNE DI ROMA
U.S.L. RM 1
LABORATORIO MEDICO
SERVIZIO INTERZONALE
V[illegible]

Prot. n. del

Servizio Ufficio

Rif. nota n. del

Oggetto: ANALISI BATTERIOLOGICA ACQUA-

In data 28/4/1988,su richiesta della Soc. GENERAL ECOLOGY ITALIA sono state eseguite le sottoriportate prove per accertare la capacità di depurazione del filtro FIRST NEED ai fini della purificazione di un'acqua di origine varia.

A tale scopo si é proceduto nel modo seguente :

A cura della Ditta General Ecology Italia,interessata alla verifica dell'efficienza del filtro sono pervenuti in Laboratorio due campioni di acqua rispettivamente del Fiume Tevere e di uno scarico fognante. Sui campioni tali e quali sono stati determinati i seguenti parametri :

	Acqua Fiume Tevere	Acqua di scarico Fognante
Coliformi fecali	220/ml.	250.000/ml.
Coliformi totali	2.000/ml.	2.000.000/ml.
Streptococchi fecali	25/ml.	15.000/ml.
Carica B.totale a 35 °C	60.000/ml.	6.000.000/ml.
Carica B.totale a 22 °C	150.000/ml.	10.000.000/ml.
Clostridi Solfito riduttori	5/ml.	600/ml.

Contemporaneamente una seconda porzione dei due campioni originari,del Tevere e della Fogna é stata introdotta,separatamente, nel filtro FIRST NEED.

UNITA' SANITARIA LOCALE RM/1

C. F. 04775720586

1ª Circoscrizione - Comune di Roma

Tel. 73.21.85 - 73.07.76 - 73.15.936 - 73.12.201

00185 ROMA
Via Ariosto 3/9

Prot. n. del

Servizio Ufficio

Rif. nota n. del

COMUNE DI ROMA
U.S.L. RM 1
LABORATORIO MEDICO
SERVIZIO INTERZONALE
VIA ARIOSTO, 3 - T. 73.14.351

Oggetto:

Dall'acqua in uscita sono state ripetute rispettivamente le stesse determinazioni sopra elencate con i seguenti risultati :

	Acqua Fiume Tevere	Acqua di scarico Fognante
Coliformi fecali	Assenti in 100 ml.	Assenti in 100 ml.
Coliformi totali	Assenti in 100 ml.	Assenti in 100 ml.
Streptococchi fecali	Assenti in 100 ml.	Assenti in 100 ml.
Carica B.totale a 35 °C	Assenti in 1 ml.	Assenti in 1 ml.
Carica B.totale a 22 °C	Assenti in 1 ml.	Assenti in 1 ml.
Clostridi solfito riduttori	Assenti in 100 ml.	Assenti in 100 ml.

C O N C L U S I O N I

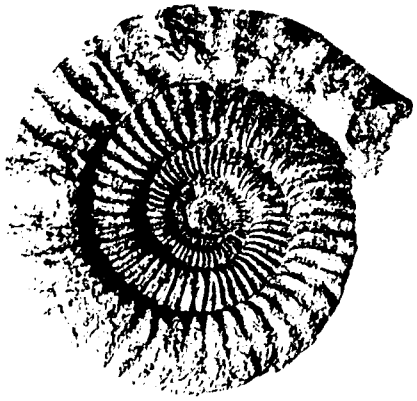
Per quanto riguarda gli indici analitici sopra riportati il filtro FIRST NEED, consegnatoci dalla Ditta GENERAL ECOLOGY ITALIA, ha dimostrato di funzionare.

L'ANALISTA

USL RM 1
BIOLOGO COADIUTORE

Irene Vinci

IL DIRETTORE
Prof. Alberto Martin Wedard



REGIONE MARCHE

UNITÀ SANITARIA LOCALE N.

Acqualagna - Apecchio - Cagli - Cantiano - Fratterosa - Frontone
Pergola - Piobbico - S. Lorenzo in Campo - Serra S. Abbondio

61043 **CAGLI** (PESARO E URBINO) - Tel. (0721) 787316-797

P. IVA - Cod. Fisc. 00648870418

Servizio Sanitario I° li, 4 Maggio

Prot. n.

Allegati n.

Oggetto: Analisi batteriologica acqua.

AL SIGNOR TARSI GIGETTO

FRONTONE

In data 3.5.1989, su richiesta del Signor Tarsi Gigetto, sono state eseguite le sottoriportate prove per accertare la capacità di depurazione del filtro FIRST NEED a fini della purificazione di un'acqua di origine varia.

A tale scopo si è proceduto ad esaminare un campione d'acqua di fiume sul quale si sono determinati i seguenti parametri:

	ACQUA FIUME
COLIFORMI TOTALI	22.000/100 ml
COLIFORMI FECALI	13.000/100 ml
STREPTOCOCCHI FECALI	2.000/100 ml

Contemporaneamente un secondo campione della stessa acqua di fiume è stato introdotto separatamente nel filtro FIRST NEED e dall'acqua in uscita sono state ripetute le stesse determinazioni sopra elencate con i seguenti risultati:

	ACQUA FIUME FILTRATA
COLIFORMI TOTALI	ASSENTI
COLIFORMI FECALI	ASSENTI
STREPTOCOCCHI FECALI	ASSENTI

Distinti saluti

L'ANALISTA
Dr.ssa M. Lorella Parlani

IL COORDINATORE SANITARIO
Dottor Luciano Galli

U.S.L. RM 30
UNITÀ SANITARIA LOCALE

COLLEFERRO
Corso Garibaldi, 7 - Tel. 973622

Cod. Fisc. 04796360586

Colleferro, 11

Protocollo N. 2357/82

Risposta al

OGGETTO:

Allegati

SERVIZIO IGIENE PUBBLICO.

In data 18 Ottobre 1982, su richiesta della Soc. GENERAL ECOLOGY ITALIA, sono stati eseguiti da parte di questo Servizio prelievi di acqua presso la sorgente " LA FONTANA DI GIOVANNI DELLA " per verificare la capacità di depurazione del filtro " FIRST-NEED ".

Le analisi sono state effettuate presso il I.I.P. di Roma e sono stati ottenuti i seguenti risultati:

PRIMA DEL FILTRO NEED	DOPO FILTRO NEED
Cloro residuo 0,3	Assente
Coliformi totali 13	Assente
Pseudomonas Aeruginosa Presente	Assente

Pertanto si conclude che dalle analisi sopra descritte, possiamo affermare che il filtro " FIRST-NEED della Ditta GENERAL ECOLOGY ITALIA dà ottimi risultati.

Mod. A 10

CATTEDRA DI
FARMACODINAMIA MOLECOLARE
FACOLTÀ DI FARMACIA
UNIVERSITÀ DI PAVIA

18

27100 PAVIA, 18.10.1977
VIALE TARAMELLI 14 - TEL. 95041

Relazione sull'apparecchio per la potabilizzazione dell'acqua "Seagul".

Scopo della ricerca

Stabilire se tale apparecchio poteva essere vantaggiosamente impiegato ai fini della potabilizzazione dell'acqua.

Descrizione dell'apparecchio

L'apparecchio è costituito essenzialmente da un cilindro apribile di acciaio inox munito di tubo di ingresso e di uscita. Nel cilindro è contenuta una speciale cartuccia filtrante strettamente avvitata al tubo di uscita. L'acqua da potabilizzare è convogliata a mezzo pompa o altra tubazione al cilindro, attraversa la cartuccia dall'esterno all'interno e esce filtrata dall'apposito bocchettone.

Tecnica adottata

L'apparecchio è stato provato con tre tipi di acqua a diverso livello di inquinamento e in particolare sono stati usati i seguenti campioni:

- 1) campione di acqua prelevato dall'acquedotto di Milano
- 2) campione di acqua proveniente da uno scarico industriale
- 3) campione di acqua appositamente inquinato con Salmonella choleraesuis e con E. coli.

Analisi batteriologiche sono state eseguite sui tre campioni all'ingresso e all'uscita dell'apparecchio, relativamente a:

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UNIVERSITÀ DI PAVIA

27100 PAVIA,
VIALE TARAMELLI, 14 - TEL. 95041

- 1) determinazione della carica batterica totale a 37° per semina diretta in piastra su Triptone Soia Agar OXOID;
- 2) determinazione del numero di coliformi; è stata usata sia la tecnica delle membrane filtranti su Endo Broth MF DIFCO sia quella per semina diretta in piastra su terreno di Levin e Mc Conkey DIFCO;
- 3) determinazione del numero di Salmonelle per semina diretta in piastra su Bismuth Sulpite Agar DIFCO.

Risultati

I risultati ottenuti sono i seguenti:

- 1) acqua proveniente dall'acquedotto di Milano

	ingresso		uscita
Colif. totali	assente	in 100 ml	assente in 100 ml.
Esc. coli	assente	in 100 ml	assente in 100 ml.
Carica batt. 37°	320	in 1 ml	assente in 1 ml.

-2) acqua proveniente da uno scarico industriale

	ingresso		uscita
Colif. totali	assente	in 1 ml	assente in 1 ml.
Esc. coli	assente	in 1 ml	assente in 1 ml.
Carica batt. 37°	200.000	in 1 ml	assente in 1 ml.

- 3) acqua preparata con Salmonella colerae suis e E. coli

	ingresso		uscita
Salm. cholerae suis	2250	in 1 ml	assente in 1 ml
E. coli	5000	in 1 ml	assente in 1 ml

CATTEDRA DI
FARMACODINAMIA MOLECOLARE
FACOLTÀ DI FARMACIA
UNIVERSITÀ DI PAVIA

27100 PAVIA,
VIALE TARAMELLI 14 - Tel. 95 041

I risultati ottenuti nelle condizioni descritte dimostrano che l'apparecchio è effettivamente in grado di ridurre a zero anche cariche batteriche molto elevate e quindi può essere ritenuto idoneo alla potabilizzazione dell'acqua.

L'Analista
Prof. Benito Bonferoni

Il Direttore dell'Istituto
Prof. Gian Luigi CORONA

LIRE 1000 LIRE 500

IL RETTORE
(Alberto Gigli Berzolari)

UNIVERSITÀ DEGLI STUDI PAVIA

OTT. 1977

P005661

UNIVERSITA' DEGLI STUDI DI SASSARI
Dipartimento di Scienze Ambientali Agrarie
e di Biotecnologie Agro-Alimentari

Gent.mo Geom. Bruno Figliola
via Guarino 2
07100 Sassari

Oggetto : Valutazione del purificatore di acqua Seagul IV

- Prove con metalli pesanti

L' apparecchio è stato provato usando un campione di acqua appositamente inquinato da metalli pesanti (Cu, Pb, Cd) aggiunti come cloruri (Cu,Cd) o come nitrati (Pb). Inoltre è stata valutata la capacità del sistema a trattenere batteri coliformi.

I risultati ottenuti sono stati i seguenti :

INQUINANTE	ACQUA IN INGRESSO	ACQUA IN USCITA
Rame (ppb)	10	3
Piombo (ppb)	10	2
Cadmio (ppb)	10	4
Cloruri	100	12

- Valutazione batteriologica

Coliformi totali (n°/100ml)	10.000	0

Dalle analisi eseguite si evince una buona capacità depurante del sistema filtrante nei riguardi dei metalli considerati e dei cloruri ed una piena capacità a trattenere la flora batterica coliforme.

In fede

Prof. Pietro Melis

Institut Pasteur

PARIS, 3 février 1982

DIRECTION
DES APPLICATIONS DE LA RECHERCHE
FL.MJH.500B

Monsieur Gérard de BONA
Société VAL
41, rue Ybry
92522 NEUILLY S/Seine Cedex

OBJET : Rapport sur les essais réalisés avec l'appareil SEAGULL N° 15825

Cher Monsieur,

Nous avons le plaisir de vous faire parvenir le rapport d'expertise établi par M. le Prof. DODIN concernant l'appareil que vous nous avez confié.

Comme indiqué à la fin de ce rapport, nous vous confirmons que les essais de votre appareil dans des conditior normales d'utilisation se sont révélés satisfaisants.

Il est toutefois précisé que pour un dossier plus complet, il serait souhaitable de réaliser des essais sur germes anaérobies et éventuellement sur virus.

Restant à votre disposition pour tout renseignement complémentaire,

Nous vous prions de croire, Cher Monsieur, à l'assurance de nos sentiments les meilleurs.

F. de LACHARRIERE

28, RUE DU DOCTEUR ROUX 75724 PARIS CEDEX 15 - TEL. 306.19.19 - TELEX 250609

Le principe de l'appareil est simple :
une pompe aspirante et refoulante qui, par pression, fait passer l'eau dans un système clos, sur une cartouche filtrante de 0,4 µ. Par la simple pression, l'eau s'écoule par un bec en métal chromé, vissé directement sur la cartouche.

1 - Dans un premier temps, nous avons travaillé avec des eaux physiologiques tamponnées artificiellement contaminées par les germes ci-après isolément :

1 -	Pseudomonas aeruginosa	10^3/100 ml
2 -	Salmonnella typhimurium	10^3/100 ml
3 -	Escherichia coli K 88	10^3/100 ml
4 -	Escherichia coli K 99	10^3/100 ml
5 -	Staphylococcus aureus	10^5/100 ml
6 -	Streptococcus foecalis	10^5/100 ml
7 -	Vibrio cholerae Ogawa	10^6/100 ml
8 -	Vibrio cholerae Inaba	10^6/100 ml

Nous avons filtré selon le mode d'emploi 250 ml d'eau renfermant les quantités de germes indiquées dans le tableau, sur membrane Millipore de 0,45 µ placées à l'étuve à 37°C.

Le premier essai avec Pseudomonas aeruginosa n'a pas été concluant puisqu'il nous a permis de retrouver 10^2 Pseudomonas aeruginosa /ml.et 10^2 Acinetobacter calcoaceticus.

En fait, nous pensons que cette contamination provient du bec verseur, qui nous a été livré exposé à l'air.
Après désinfection de la totalité de l'appareil par une eau renfermant un système générateur de radicaux libres hydroxyles l'essai avec une eau physiologique tamponnée stérile nous a fourni une eau stérile au bec verseur.

Les essais sur les bactéries pathogènes ont tous été négatifs, l'eau délivrée par l'appareil étant exempte de germes.

II - Nous avons surcontaminé artificiellement une eau brute de l'Oise par des mélanges de germes oxydase + oxydase -.

a) Pseudomonas aeruginosa 10^5/100 ml
+ Escherichia coli K 88 10^3/100 ml

b) Vibrio cholerae Inaba 10^3/100 ml
+ Salmonnella typhimurium C5 10^3/100 ml

c) Escherichia coli K 99 10^3/100 ml
+ Staphylocoque 10^3/100 ml

Pour les 3 mélanges a, b, c, avec les germes naturels de l'Oise, la numération des germes était de 10^5 germes/ml. Après passage de 200 ml sur l'appareil, nous n'avons pas retrouvé de germes par filtration de la totalité de l'eau sur membrane Millipore 0.45 u et cultures sur gélose.

L'appareil n'a pas été utilisé pendant 70 jours et a été laissé à la température du laboratoire sans précaution spéciale.

Nous avons, dans un premier temps, passé 200 ml d'eau physiologique stérile sur l'appareil Seagull IV et recherché si cette eau était contaminée, le bec verseur ayant été soigneusement flambé, et l'eau est restée parfaitement stérile.

Nous avons recherché une altération éventuelle de la membrane en filtrant une eau surcontaminée par un mélange de Pseudomonas aeruginosa 10^7
Escherichia coli K 89 10^7
Staphylococcus aureus 10^6

dans 200 ml d'eau de l'Oise.

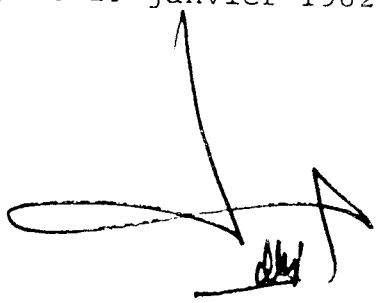
CONCLUSION

Dans sa présentation actuelle, l'appareil Seagull IV nous a donné pleine satisfaction sur le plan de la stérilisation d'une eau brute, d'une eau brute surcontaminée par des germes pathogènes. Par contre, il serait intéressant de réaliser des essais avec des germes anaérobies toxigènes, pour être assuré qu'une contamination par un Clostridium botulinum n'est pas susceptible de relâcher une toxine botulinique si l'anaérobiose du système est suffisant.

Les essais après abandon de l'appareil pendant plus de 70 jours n'ont pas modifié les résultats.

Les essais en fonctionnement continu ou avec des eaux riches en suspension n'ont pas été réalisés pour déterminer la durée de validité de la cartouche.

Fait à PARIS, le 29 janvier 1982



The Commonwealth of Massachusetts
Division of Registration
Leverett Saltonstall Building, Government Center
100 Cambridge Street, Boston 02202

December 15, 1989

Domenic A. Maition
H20 Purification System
P.O. Box 339
Watertown, MA 02172

Re: Seagull IV Model X-2F

Dear Sir:

You are hereby advised it was the vote of the Board at their December 6, 1989 meeting to grant a one year provisional approval to the above referenced product.

Approval has been granted subject to installation in compliance with the Massachusetts State Plumbing Code and/or the Massachusetts Fuel Gas Code; said approval in effect from December 6, 1989 to December 6, 1990. At the expiration of the provisional one year approval, it will be necessary for the manufacturer to petition this Board for an extension of said approval.

You are further advised the preceding approval is not to be construed as an endorsement of this product nor is this letter to be used or reproduced as advertisement for the product.

Very truly yours,
For the Board

Louis J. Visco

Louis J. Visco, Executive Secretary
Board of State Examiners of Plumbers and Gas Fitters

ms:

United States Testing Company, Inc.
Tulsa Division
1341 NO. 108th EAST AVENUE TULSA, OKLAHOMA 74116
TELEPHONE: AREA CODE 918-437-8333

REPORT OF TEST

CLIENT: General Ecology, Inc.
151 Sheree Blvd.
Lionville, PA 19353
Attn: Paul Murphy

NUMBER
89-0399
10/23/89

SUBJECT: United States Testing Company has reviewed the Plumbing Codes concerning water treatment systems and determined that NSF 53 and ASME Pressure Vessel Code, Section 8 contain the appropriate tests for the qualification of these systems. Testing of water treatment systems in accordance with NSF 53, Table F.1 and ASME Section 8 for pressure was performed. Certain EPA toxicity requirements were included for reference.

SAMPLE IDENTIFICATION

Seagull IV X-1F Drinking Water Treatment Systems with RS-1SG filter cartridges.

TEST RESULTS - NSF 53, Table F.1

Parameter	Results mg/l	Maximum Permissible Level, mg/l
Lead	<.02	0.020
Mercury	0.0006	0.002
Chromium	<.05	0.050
Cadmium	<.005	0.005
Phenolic Substances	<.002	0.05
TTHM as Chloroform	<.01	0.10
Vinyl Chloride	<.001	0.001
Color	Acceptable	<Control
Taste	Acceptable	<Control
Three TON (Threshold Odor Number)	Acceptable	97.5%

SIGNED FOR THE COMPANY
BY C. Richard Finley
Mgr/Laboratory Servic

TEST RESULTS - EPA Toxicity Parameters

Parameter	Results mg/l	Maximum Permissible Level, mg/l
Antimony	<.004	0.05
Arsenic	<.002	0.05
Barium	<.14	1.0
Selenium	<.002	0.01
Tin	<.002	0.05
pH	7.4	----
Total Dissolved Solids	2.1	70.0

TEST RESULTS - Pressure Testing, ASME Section 8

Internal Pressure, psi	Specification	Working Pressure, psi
190	187.5	125
192	187.5	125
190	187.5	125

The material reports from purchased raw and fabricated components were reviewed. It was found that the material used to fabricate the filters meet the requirements of one of the following specifications.

Casing, 304 stainless steel - ASTM A167
Machine Brass Fittings, FC Brass - ASTM B16
Rubber Gaskets, BUNA-N - ASTM D2000

The listed materials are acceptable for this application.

CONCLUSION

The units tested meet the requirements of the NSF 53, EPA PB-87 and ASME Section 8 for drinking water treatment systems.

United States Testing Company, Inc.

Tulsa Division

1341 NO. 108th EAST AVENUE TULSA, OKLAHOMA 74116
TELEPHONE: AREA CODE 918-437-8333

REPORT OF TEST

CLIENT: General Ecology, Inc.
151 Sheree Blvd.
Lionville, PA 19353

Attn: Paul Murphy

NUMBER
89-0399
10/23/89

SUBJECT: United States Testing Company has reviewed the Plumbing Codes concerning water treatment systems and determined that NSF 53 and ASME Pressure Vessel Code, Section 8 contain the appropriate tests for the qualification of these systems. Testing of water treatment systems in accordance with NSF 53, Table F.1 and ASME Section 8 for pressure was performed. Certain EPA toxicity requirements were included for reference.

SAMPLE IDENTIFICATION

Seagull IV X-1F Drinking Water Treatment Systems with RS-1SG filter cartridges.

TEST RESULTS - NSF 53, Table F.1

Parameter	Results mg/l	Maximum Permissible Level, mg/l
Lead	<.02	0.020
Mercury	0.0006	0.002
Chromium	<.05	0.050
Cadmium	<.005	0.005
Phenolic Substances	<.002	0.05
TTHM as Chloroform	<.01	0.10
Vinyl Chloride	<.001	0.001
Color	Acceptable	<Control
Taste	Acceptable	<Control
Three TON (Threshold Odor Number)	Acceptable	97.5%

SIGNED FOR THE COMPANY
BY C. Richard Finley
Mgr/Laboratory Service

TEST RESULTS - EPA Toxicity Parameters

Parameter	Results mg/l	Maximum Permissible Level, mg/l
Antimony	<.004	0.05
Arsenic	<.002	0.05
Barium	<.14	1.0
Selenium	<.002	0.01
Tin	<.002	0.05
pH	7.4	----
Total Dissolved Solids	241	70.0

TEST RESULTS - Pressure Testing, ASME Section 8

Internal Pressure, psi	Specification	Working Pressure, psi
190	187.5	125
192	187.5	125
190	187.5	125

The material reports from purchased raw and fabricated components were reviewed. It was found that the material used to fabricate the filters meet the requirements of one of the following specifications.

Casing, 304 stainless steel - ASTM A167
Machine Brass Fittings, FC Brass - ASTM B16
Rubber Gaskets, BUNA-N - ASTM D2000

The listed materials are acceptable for this application.

CONCLUSION

The units tested meet the requirements of the NSF 53, EPA PB-87 and ASME Section 8 for drinking water treatment systems.

United States Testing Company, Inc.

Tulsa Division

1341 NO. 108th EAST AVENUE TULSA, OKLAHOMA 74116
TELEPHONE: AREA CODE 918-437-8333

REPORT OF TEST

CLIENT: General Ecology Inc.
151 Sheree Blvd.
Lionville, PA 19353

Attn: Paul Murphy

NUMBER
89-0425
11/21/89

SUBJECT: Testing of Seagull X-2F water purification system for Massachusetts Plumbing Board approval.

SAMPLE IDENTIFICATION

Seagull X-2F with RS-2SG cartridge.

TEST RESULTS

The Seagull X-2F is made of the same material as the Seagull X-1F. The Seagull X-1F was previously tested and reported in Report Number 89-0399. We consider the test results reported in accordance with NSF 53, Table F.1 to apply to the Seagull X-2F. We also consider the EPA toxicity parameters to apply.

-Pressure Testing, ASME Section 8-

Internal Pressure, psi	Specification	Working Pressure, psi
190	187.5	125
190	187.5	125
205	187.5	125

CONCLUSION

The units tested meet the requirements of NSF 53, EPA PB-87 and ASME Section 8 for drinking water treatment systems as required by the Massachusetts Plumbing Board.

SIGNED FOR THE COMPANY
BY C. Richard Finley
Mgr/Laboratory Service

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
FOOD AND DRUG ADMINISTRATION
ROCKVILLE, MARYLAND 20852

November 4, 1975

General Ecology Inc.
Great Valley Center
Rt. 30/Rt. 401
Malvern, Pennsylvania 19355

Attention: Mr. William Murray
President

Gentlemen:

In accordance with the interstate carrier provisions of the Interstate Quarantine Regulations, a review has been conducted of the equipment listed below. Based on current sanitation requirements, and the requirements of the Food Additive Amendments to the Federal Food, Drug, and Cosmetic Act, this equipment has been found to be in compliance.

ITEM	MODEL NUMBER
Activated Carbon Filter Cartridge	0 - Series

One of the considerations used in arriving at this acceptance was the basic design and construction aspects. Performance was not an integral part of the evaluation criteria. For these reasons, it is necessary that any special performance or design requirements of the Interstate Quarantine Regulations be further considered by the intended user prior to installation and use of equipment. Further, it is incumbent on industry to insure continued compliance with applicable sections of the Food Additive Regulations issued under the Food, Drug, and Cosmetic Act.

It will be the responsibility of the manufacturer to notify the Food and Drug Administration of any changes in model numbers or modification in design so that appropriate action can be initiated. Design changes necessitate reevaluation of the equipment.

The sole purpose of this letter is to advise you, as the manufacturer, of our findings so that interested interstate carriers may be advised of our position as regards the above equipment. It does not constitute endorsement or recommendation, nor does it imply that this equipment is superior to similar items manufactured by others. Neither this letter nor the information contained herein may be used for advertising purposes.

Sincerely yours,

Richard S. Nacewicz

Richard S. Nacewicz
Chief, Interstate Travel
Sanitation Branch

State of Wisconsin \ Department of Industry, Labor and Human Relations

SAFETY & BUILDINGS DIVISION

Bureau of Plumbing
201 East Washington Avenue
P.O. Box 7969
Madison, WI 53707

June 19, 1987

General Ecology Inc.
151 Sheree Boulevard
Lionville, PA 19353

Product Approval No. 92-06-0315-M-125

Attn: Richard Williams

Re: Product description: Water Treatment Device
Manufacturer: General Ecology
Product Name: Seagull IV
Model Number: X-1

The specifications for this plumbing product have been reviewed for compliance with chapters ILHR 82 through 84, Wisconsin Administrative Code, and chs. 145 and 160, Wisconsin Statutes. The Department has determined that this plumbing product complies with chs. ILHR 82 through 84, Wis. Adm. Code, and chs. 145 and 160, Wis. Stats.

The Department hereby issues an approval based on the Wisconsin Statutes and the Wis. Adm. Code. The approval is valid until the end of June, 1992.

Based on testing data submitted to and reviewed by the department, this approval recognizes that these plumbing products will remove the contaminants stated on attachment numbers 1, 2, 3, 4 and 5 at the stated conditions and concentrations. Each attachment represents one influent.

The Department is in no way endorsing this product or any advertising, and is not responsible for any situation which may result from its use.

Sincerely,

Robert G. DuPont

Robert G. DuPont, Chief
Section of Licensing, Administrative
Services, Product Review and Platting
(608) 266-7319

RGD:LT:2228y

cc: All Plumbing Consultants
All Private Sewage Consultants

Attachment Number 1
Product Approval Number: 92-06-0315-M-125
June 19, 1987

Flow Rate: 1.0 gallons per minute
Maintenance Cycle: 1000 gallons

	Influent ppb	Effluent ppb	Detection Limit ppb
Trichloroethylene	64.3	BDL	0.1

BDL - Below Detection Limit

Attachment Number 2
Product Approval Number: 92-06-0315-M-125
June 19, 1987

Flow Rate: 1.0 gallons per minute
Maintenance Cycle: 1000 gallons

	Influent ppb	Effluent ppb	Detection Limit ppb
Trichloroethylene	378	0.1	0.1

BDL - Below Detection Limit

Attachment Number 3
Product Approval Number: 92-06-0315-M-125
June 19, 1987

Flow Rate: 1.0 gallons per minute
Maintenance Cycle: 1000 gallons

	Influent ppb	Effluent ppb	Detection Limit ppb
Aldicarb	228	BDL	1.0

BDL - Below Detection Limit

Attachment Number 4
Product Approval Number: 92-06-0315-M-125
June 19, 1987

Flow Rate: 1.0 gallons per minute
Maintenance Cycle: 1000 gallons

	Influent ppb	Effluent ppb	Detection Limit ppb
1,2-Dibromoethane	1.9	BDL	0.2

BDL - Below Detection Limit

Attachment Number 5
Product Approval Number: 92-06-0315-M-125
June 19, 1987

The filter has an absolute micron rating of 0.4 and a nominal micron rating of 0.1.

State of Wisconsin \ Department of Industry, Labor and Human Relations

SAFETY & BUILDINGS DIVISION

Bureau of Plumbing
201 East Washington Avenue
P.O. Box 7969
Madison, WI 53707

June 19, 1987

General Ecology Inc.
151 Sheree Boulevard
Lionville, PA 19353

Product Approval No. 92-06-0315-M-126

Attn: Richard Williams

Re: Product description: Water Treatment Device
Manufacturer: General Ecology
Product Name: Spark-L-Pure

The specifications for this plumbing product have been reviewed for compliance with chapters ILHR 82 through 84, Wisconsin Administrative Code, and chs. 145 and 160, Wisconsin Statutes. The Department has determined that this plumbing product complies with chs. ILHR 82 through 84, Wis. Adm. Code, and chs. 145 and 160, Wis. Stats.

The Department hereby issues an approval based on the Wisconsin Statutes and the Wis. Adm. Code. The approval is valid until the end of June, 1992.

Based on testing data submitted to and reviewed by the department, this approval recognizes that these plumbing products will remove the contaminants stated on attachment numbers 1 and 2 at the stated conditions and concentrations. Each attachment represents one influent.

The Department is in no way endorsing this product or any advertising, and is not responsible for any situation which may result from its use.

Sincerely,

Robert G. DuPont, Chief
Section of Licensing, Administrative
Services, Product Review and Platting
(608) 266-7319

RGD:LT:2229y

cc: All Plumbing Consultants
All Private Sewage Consultants

Attachment Number 1
Product Approval Number: 92-06-0315-M-126
June 19, 1987

Flow Rate: One to 6 gallons per minute
Maintenance Cycle: 30,000 gallons

	Influent ppb	Effluent ppb	Detection Limit ppb
1,2 - Dibromoethane	10.6	BDL	0.02

BDL - Below Detection Limit

Other influent conditions: The influent was unchlorinated tap water from Whatley, Massachusetts.

Attachment Number 2
Product Approval Number: 92-06-0315-M-126
June 19, 1987

This product has an absolutely micron rating of 1.

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
Carroll D. Besadny
Secretary

BOX 7921
MADISON, WISCONSIN 53707

February 15, 1988

IN REPLY REFER TO: 3320

General Ecology, Inc.
151 Sheree Boulevard
Lyonville, PA 19353

SUBJECT: Manufacturer: General Ecology, Inc.
Product Name: Seagull IV
Model Number: X-2

Attn: Richard Williams:

The Department of Industry, Labor and Human Relations (DILHR) granted an equipment approval for the water treatment device described above on November 20, 1987, and issued Product Approval No. 870602. The DILHR approval recognized that the water treatment device would remove the contaminants Trichloroethylene, Aldicarb and 1,2-Dibromoethane.

DILHR grants equipment approvals, while the Department of Natural Resources (DNR) grants approvals to individual homeowners desiring to install the water treatment device to remove contaminants from their contaminated water supply. Individuals desiring to install the water treatment device as approved by DILHR to remove aesthetic parameters or to be installed on an uncontaminated water supply do not need DNR approval.

A "contaminated well" or "contaminated water supply" means a well or a private water supply which:

1. Produces water containing one or more substances of public health concern in excess of a primary maximum contaminant level promulgated in the national drinking water standards in 40 CFR 141 and 143; or

2. Produces water containing one or more substances of public health concern in excess of an enforcement standard established under ch. 160, Stats.; or

3. Is subject to a written advisory opinion issued by the DNR, containing a specific descriptive reference to the well or water supply and recommending that the well or supply not be used because of potential public health risks.

The DNR cannot grant individual approvals to allow installation of your water treatment device to remove contaminants from a contaminated water supply because your device is not whole house treatment systems.

We are requesting that you submit seven product sales brochures to the DNR at the above address so that a brochure can be mailed to each of our District offices.

Should you have any questions, please contact Robert Schaefer at 608/266-3415.

Sincerely,

William T. Rock, P.E., Chief
Private Water Supply Section
Bureau of Water Supply

WTR:RS:jmc/3127E
Enc.

cc: District Water Supply Supv.
Robert Schaefer - WS/2
Private Water Supply, R. Krill, R. Baumeister - Routed Copy
Loretta Trapp - DILHR

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
Carroll D. Besadny
Secretary

BOX 7921
MADISON, WISCONSIN 53707

February 15, 1988

IN REPLY REFER TO: 3320

General Ecology Inc.
151 Sheree Blvd.
Lionville, PA 19353

SUBJECT: Manufacturer: General Ecology Inc.
Product Name: Seagull
Model Number: X-6

Attn: Mr. Richard Williams:

The Department of Industry, Labor and Human Relations (DILHR) granted an equipment approval for the water treatment device described above on November 20, 1987, and issued Product Approval No. 870700. The DILHR approval recognized that the water treatment device would remove the contaminants Trichloroethylene, Aldicarb, and 1, 2-Dibromoethane.

DILHR grants equipment approvals, while the Department of Natural Resources (DNR) grants approvals to individual homeowners desiring to install the water treatment device to remove contaminants from their contaminated water supply. Individuals desiring to install the water treatment device as approved by DILHR to remove aesthetic parameters or to be installed on an uncontaminated water supply do not need DNR approval.

A "contaminated well" or "contaminated water supply" means a well or a private water supply which:

1. Produces water containing one or more substances of public health concern in excess of a primary maximum contaminant level promulgated in the national drinking water standards in 40 CFR 141 and 143; or

2. Produces water containing one or more substances of public health concern in excess of an enforcement standard established under ch. 160, Stats.; or

3. Is subject to a written advisory opinion issued by the DNR, containing a specific descriptive reference to the well or water supply and recommending that the well or supply not be used because of potential public health risks.

Enclosed with this letter are several forms to be used by individuals preparing an application seeking DNR approval to install the water treatment device to remove contaminants from a contaminated water supply. Part of the application process requires the individual to provide written justification as to why an uncontaminated source of water cannot be obtained. A DNR approval will require, at a minimum, monitoring requirements and contract maintenance agreements. The device may be used only as a Point of Entry contaminant removal device.

We are requesting that you submit seven product sales brochures to the DNR at the above address so that a brochure can be mailed to each of our District offices.

Should you have any questions, please contact Robert Schaefer at 608/266-3415.

Sincerely,

William T. Rock, P.E., Chief
Private Water Supply Section
Bureau of Water Supply

WTR:RS:3108E

WATER BOARD
SYDNEY–ILLAWARRA–BLUE MOUNTAINS

Tel: 269-6608
Mr D. Cox

14 February 1990

Mr R T Williams
General Ecology Inc
151 Sheree Boulevard
Lionville, PA 19353 U.S.A.

Dear Richard,

I have recently had discussions with Mr George Kaldas of Quality European Imports concerning the approval of the Seagull range of water purifiers. During our discussions, George indicated that General Ecology was instrumental in the preparation of a draft standard for water purifiers for use in the U.S.A., a project that was later abandoned.

The dramatic increase in the use of water purifiers within Australia has prompted the Major Urban Water Authorities and Standards Australia to consider the preparation of an Australian Standard for "domestic water treatment devices".

It would be of great assistance to the Standards Australia committee if you could supply me with relevant documents which may assist us in the preparation of our standard for these devices.

I have enclosed a copy of the letter circulated by Standards Australia which gives some background information to my request.

Yours faithfully,

David A Cox
Project Manager,
Product Authorisations

ref: 1462c/TM:mk

16 JANUARY 1990

STANDARDS AUSTRALIA

STANDARDS ASSOCIATION
OF AUSTRALIA
HEAD OFFICE
STANDARDS HOUSE
80 ARTHUR STREET
NORTH SYDNEY NSW
MAIL
PO BOX 458
NORTH SYDNEY
NSW 2059
TELEPHONE (02) 963 4111
TELEX 26514
FAX (02) 959 3896

CIRCULAR

THE SECRETARY
MWS&DB
PO Box A53
SYDNEY SOUTH NSW 2000

RE: STANDARD FOR DOMESTIC WATER TREATMENT APPLIANCES

Standards Australia has recently received a request to standardize a compliance criteria for domestic water treatment appliances. The most popular water treatment appliances being marketed in Australia (most are imported) are:

(a) filter units,

(b) charcoal filtration units,

(c) distillation units,

(d) deionization units,

(e) reverse osmosis units,

(f) ultraviolet light units.

Some systems combine several of the above techniques because each individual technique has some disadvantages and limitations.

The proposal received suggested that an Australian Standard compliance criteria should include--

- Selection of suitable materials and standards of construction;
- Information on susceptibility to variations in water quality; (e.g. rain, dam or bore water);
- Definition of appropriate cleaning, maintenance and disinfection procedures; which would be safe and reliable in the hands of non-expert users;
- Information on safety of stored, "purified" product water;

- Certification of appliance performance, using a variety of realistic urban and rural water inputs, and comprehensive testing and analysis; and

- Information on service life expectancy after passage of various volumes of water.

Could you please indicate whether you feel there is a need to produce an Australian Standard for domestic water treatment applicance in this area by completing the attached form and returning it to Standards Australia before Friday 23 February 1990.

Yours sincerely,

Terence M Flynn

T M FLYNN
Executive Officer

WATER BOARD

HEAD OFFICE : Corner Pitt and Bathurst Streets, Sydney, N.S.W
Postal Address : P.O. Box A53, Sydney South, N.S.W 2000 DX14 Telex 127881 Telephone: 269 6650

CERTIFICATE OF AUTHORISATION

(Valid Only Within the Board's Area of Operations)

File No. 276801F0

Authorisation Number	Description of Submission
90/00944	General Ecology "Trav-L-Pure" Water Purifier, Diverter Model, attachment to tap aerator, wall mounted, plastic filter casing with filter cartridge matrix, plastic tubing, Pressure Rating 875kPa..

Special Conditions

1. There must be no change in the source, nature and origin of the ingredients or in the process of manufacture of the products.
2. Each fitting/fixture shall be installed in accordance with the manufacturers instructions, and the Board's Plumbing Regulations.
3. The water supply to each unit shall be controlled by an authorised stop tap (loose jumper valve type) with an authorised non-return valve installed between the unit & the stop tap.
4. When installed in areas where the pressure exceeds the recommended operating pressure the fitting/fixture shall be installed in conjunction with an Authorised Pressure Limiting Device.
5. A prominent sign shall be attached to the unit conveying the following:- "Warning: This filter must be maintained regularly & the filter media changed periodically as advised in the Users Instructions."
6. The Board accepts no responsibility for the function, operation, performance, or the efficiency of the product.
7. This Certificate is valid until June 1992, upon which your firm must obtain Certification from Standards Australia, and bear the StandardsMark or WaterMark for the products acceptance within the Boards area of operations.

Issued To	Quality European Imports 46 River Road West Lane Cove NSW 2066
Manufacturer's Name	General Ecology Inc-Pennsylvania USA
Signed Drawing Issued	Nil
Tested To	BOARD'S REQUIREMENT
Evaluation Report Issued	Nil

PROJECT MANAGER
Standards and Authorisation
7 NOV/1990

This Certificate is issued in accordance with the Board's Act and By-Laws and authorises the items described above to be connected to the Board's water supply and/or sewerage systems.
This Certificate is issued without alteration or erasure.

WATER BOARD

HEAD OFFICE : Corner Pitt and Bathurst Streets, Sydney, N.S.W
Postal Address : P.O. Box A53, Sydney South, N.S.W 2000 DX14 Telex 127881 Telephone: 269 6650

CERTIFICATE OF AUTHORISATION

(Valid Only Within the Board's Area of Operations)

File No. 276801F0

Authorisation Number	Description of Submission
90/00945	General Ecology "Spark-L-Pure" Water Microfiltration System, stainless steel container, with 20mm or 25mm inlet/outlet connections, with Aqua-Polish-7, microstrainer cartridges structured Matrix screen elements, Pressure Rating 700kPa..

Special Conditions

1. There must be no change in the source, nature and origin of the ingredients or in the process of manufacture of the products.
2. Each fitting/fixture shall be installed in accordance with the manufacturers instructions, and the Board's Plumbing Regulations.
3. The water supply to each unit shall be controlled by an authorised stop tap (loose jumper valve type) with an authorised non-return valve installed between the unit & the stop tap.
4. When installed in areas where the pressure exceeds the recommended operating pressure the fitting/fixture shall be installed in conjunction with an Authorised Pressure Limiting Device.
5. A prominent sign shall be attached to the unit conveying the following:- "Warning: This filter must be maintained regularly & the filter media changed periodically as advised in the Users Instructions."
6. The Board accepts no responsibility for the function, operation, performance, or the efficiency of the product.
7. This Certificate is valid until June 1992, upon which your firm must obtain Certification from Standards Australia, and bear the StandardsMark or WaterMark for the products acceptance within the Boards area of operations.

Issued To	Quality European Imports 46 River Road West Lane Cove NSW 2066
Manufacturer's Name	General Ecology Inc-Pennsylvania USA
Signed Drawing Issued	Nil
Tested To	BOARD'S REQUIREMENTS
Evaluation Report Issued	Nil

PROJECT MANAGER
Standards and Authorisation
7 NOV 1990

This Certificate is issued in accordance with the Board's Act and By-Laws and authorises the items described above to be connected to the Board's water supply and/or sewerage systems.
This Certificate is issued without alteration or erasure.

WATER BOARD
HEAD OFFICE : Corner Pitt and Bathurst Streets, Sydney, N.S.W
Postal Address : P.O. Box A53, Sydney South, N.S.W 2000 DX14 Telex 127881 Telephone: 269 6650

CERTIFICATE OF AUTHORISATION

(Valid Only Within the Board's Area of Operations)

File No. 276801F0

Authorisation Number	Description of Submission
90/00946	General Ecology "Seagull IV" Purification Water Treatment Unit, MODEL:- X-1B; (Basic Model); X-1F (Drinking Faucet Models); X-1D (Diverter Model from Sink tap aerator), stainless steel filter casing with RS-1SG or RS-2SG filter cartridge (matrix) flexible plastic tubing, 6mm connection, Pressure Rating 875kPa..

Special Conditions

1. There must be no change in the source, nature and origin of the ingredients or in the process of manufacture of the products.
2. Each fitting/fixture shall be installed in accordance with the manufacturers instructions, and the Board's Plumbing Regulations.
3. The water supply to each unit shall be controlled by an authorised stop tap (loose jumper valve type) with an authorised non-return valve installed between the unit & the stop tap.
4. When installed in areas where the pressure exceeds the recommended operating pressure the fitting/fixture shall be installed in conjunction with an Authorised Pressure Limiting Device.
5. A prominent sign shall be attached to the unit conveying the following:- "Warning: This filter must be maintained regularly & the filter media changed periodically as advised in the Users Instructions."
6. The Board accepts no responsibility for the function, operation, performance, or the efficiency of the product.
7. This Certificate is valid until June 1992, upon which your firm must obtain Certification from Standards Australia, and bear the StandardsMark or Water-Mark for the products acceptance within the Boards area of operations.
8. NOTE:- THe use of a tapping saddle valve on the water supply to the filter units is NOT PERMITTED

Issued To	Quality European Imports 46 River Road West Lane Cove NSW 2066
Manufacturer's Name	General Ecology Inc-Pennsylvania USA
Signed Drawing Issued	Nil
Tested To	BOARD'S REQUIREMENT
Evaluation Report Issued	Nil

PROJECT MANAGER
Standards and Authorisation
1 NOV 1990

This Certificate is issued in accordance with the Board's Act and By-Laws and authorises the items described above to be connected to the Board's water supply and/or sewerage systems.
This Certificate is issued without alteration or erasure.

WATER BOARD

HEAD OFFICE : Corner Pitt and Bathurst Streets, Sydney, N.S.W
Postal Address : P.O. Box A53, Sydney South, N.S.W 2000 DX14 Telex 127881 Telephone: 269 6650

CERTIFICATE OF AUTHORISATION

(Valid Only Within the Board's Area of Operations)

File No. 276801F0

Authorisation Number	Description of Submission
90/00947	General Ecology "Seagull IV" Purification Water Treatment Unit, MODEL:- X-2B; ((Two GPM Model - Basic Unit) and X-6 (Six GPM Model-Basic Unit), stainless steel filter casing with RS-1SG or RS-2SG filter cartridge (matrix) flexible plastic tubing, 6mm connection, Pressure Rating 875kPa..

Special Conditions

1. There must be no change in the source, nature and origin of the ingredients or in the process of manufacture of the products.
2. Each fitting/fixture shall be installed in accordance with the manufacturers instructions, and the Board's Plumbing Regulations.
3. The water supply to each unit shall be controlled by an authorised stop tap (loose jumper valve type) with an authorised non-return valve installed between the unit & the stop tap.
4. When installed in areas where the pressure exceeds the recommended operating pressure the fitting/fixture shall be installed in conjunction with an Authorised Pressure Limiting Device.
5. A prominent sign shall be attached to the unit conveying the following:- "Warning: This filter must be maintained regularly & the filter media changed periodically as advised in the Users Instructions."
6. The Board accepts no responsibility for the function, operation, performance, or the efficiency of the product.
7. This Certificate is valid until June 1992, upon which your firm must obtain Certification from Standards Australia, and bear the StandardsMark or WaterMark for the products acceptance within the Boards area of operations.
8. NOTE:- The use of a tapping saddle valve on the water supply to the filter units is NOT PERMITTED

Issued To	Quality European Imports 46 River Road West Lane Cove NSW 2066
Manufacturer's Name	General Ecology Inc-Pennsylvania USA
Signed Drawing Issued	Nil
Tested To	BOARD'S REQUIREMENTS
Evaluation Report Issued	Nil

PROJECT MANAGER
Standards and Authorisation
1/NOV 1990

This Certificate is issued in accordance with the Board's Act and By-Laws and authorises the items described above to be connected to the Board's water supply and/or sewerage systems.
This Certificate is issued without alteration or erasure.

FOOD RESEARCH INSTITUTE
University of Wisconsin-Madison
Department of Food Microbiology and Toxicology 1925 Willow Drive Madison WI 53706 608-263- 5936

September 25, 1986

Mr. Richard T. Williams
General Ecology, Inc.
151 Sheree Blvd.
Lionville, PA 19353

Dear Mr. Williams:

Results of our studies to evaluate the efficacy of the Seagull IV Water Purification System in removing Campylobacter jejuni, Yersinia enterocolitica, and Listeria monocytogenes from water, are included in the attached reports.

Let me know if you have any questions.

Sincerely,

Michael P. Doyle
Associate Professor

MPD:sbr

Enc.

Removal of Campylobacter jejuni from Tap Water by Filtration

Michael P. Doyle and Jean L. Schoeni

Food Research Institute
University of Wisconsin
Madison, Wisconsin 53706

Objective:

To determine if the Seagull IV Water Purification System will remove Campylobacter jejuni from tap water during the life expectancy of the purification cartridge.

Approach:

Three different Seagull IV Water Purification System units (Serial Nos. 74997, 74998, 74996) with filter number 1705R2 were tested. A washed culture of Campylobacter jejuni strain INN was introduced into each water purification unit (with an injection apparatus) after 5, 450, and 955 gallons of cold tap water had run through the system. A total of 100 ml of C. jejuni culture containing 1.6×10^5 to 3.0×10^5 cells per ml was introduced into each purification unit at each injection time.

After the organisms were injected into the system, the purification unit was reconnected to the water faucet and three water samples (50 ml each) were collected. The samples were collected: (1) immediately after the water began to flow, (2) after 1 liter of water flowed through the cartridge, and (3) after 2 liters of water flowed through the cartridge. Each sample was plated (0.1 ml/plate) in duplicate onto Campy BAP plates which were held under microaerobic conditions (5% O_2, 10% CO_2, 85% N_2) at 42°C for 48 h and then examined for C. jejuni. In addition, 25 ml of each sample was placed into enrichment broth and assayed for C. jejuni according to the procedure of Doyle and Roman (Appl. Environ. Microbiol. 43:1343-1353, 1982).

Results:

Filter Unit No.	Sample	Recovery of C. jejuni	
		Campy BAP (No. Campy/ml)	Enrichment[a]
1	5 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	450 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	955 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
2	5 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	450 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	955 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
3	5 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	450 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	955 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-

[a]-, negative for C. jejuni.

Discussion:

No cells of C. jejuni were detected in any of the filtered water samples indicating that the filtration units effectively removed the organism from tap water under the conditions of the test.

Removal of *Listeria monocytogenes* from Tap Water by Filtration

Michael P. Doyle and Jean L. Schoeni

Food Research Institute
University of Wisconsin
Madison, Wisconsin 53706

Objective:

To determine if the Seagull IV Water Purification System will remove *Listeria monocytogenes* from tap water during the life expectancy of the purification cartridge.

Approach:

Three different Seagull IV Water Purification System units (Serial Nos. 74997, 74998, 74996) with filter number 1705R2 were tested. A washed culture of *Listeria monocytogenes* strain Scott A was introduced into each water purification unit (with an injection apparatus) after 5, 450, and 955 gallons of cold tap water had run through the system. A total of 100 ml of *L. monocytogenes* culture containing 2.2×10^5 to 2.8×10^5 cells/per ml was introduced into each purification unit at each injection time.

After the organisms were injected into the system, the purification unit was reconnected to the water faucet and three water samples (50 ml each) were collected. The samples were collected: (1) immediately after the water began to flow, (2) after 1 liter of water flowed through the cartridge, and (3) after 2 liters of water flowed through the cartridge. Each sample was plated (0.1 ml/plate) in duplicate onto McBride Listeria agar plates which were held at 37°C and examined for *L. monocytogenes* at 24 and 48 h. In addition, 25 ml of each sample was placed into enrichment broth and assayed for *L. monocytogenes* according to the procedure of Doyle and Schoeni (Appl. Environ. Microbiol. 51:1127, 1986).

Results:

Filter Unit No.	Sample	Recovery of L. monocytogenes	
		McBride Listeria agar (No. Listeria/ml)	Enrichment[a]
1	5 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	450 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	955 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
2	5 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	450 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	955 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
3	5 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	450 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	955 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-

[a]-, negative for L. monocytogenes.

Discussion:

No cells of L. monocytogenes were detected in any of the filtered water samples indicating that the filtration units effectively removed the organism from tap water under the conditions of the test.

Removal of Yersinia enterocolitica from Tap Water by Filtration

Michael P. Doyle and Jean L. Schoeni

Food Research Institute
University of Wisconsin
Madison, Wisconsin 53706

Objective:

To determine if the Seagull IV Water Purification System will remove Yersinia enterocolitica from tap water during the life expectancy of the purification cartridge.

Approach:

Three different Seagull IV Water Purification System units (Serial Nos. 74997, 74998, 74996) with filter number 1705R2 were tested. A washed culture of Yersinia enterocolitica strain 34/1B (pathogenic isolate) was introduced into each water purification unit (with an injection apparatus) after 5, 450, and 955 gallons of cold tap water had run through the system. A total of 100 ml of L. monocytogenes culture containing 2.0×10^5 to 2.8×10^5 cells per ml was introduced into each purification unit at each injection time.

After the organisms were injected into the system, the purification unit was reconnected to the water faucet and three water samples (50 ml each) were collected. The samples were collected: (1) immediately after the water began to flow, (2) after 1 liter of water flowed through the cartridge, and (3) after 2 liters of water flowed through the cartridge. Each sample was plated (0.1 ml/plate) in duplicate onto CIN (cefsulodin-irgasan-novobiocin) agar plates which were held at 32°C and examined for Y. enterocolitica after 24 and 48 h of incubation. In addition, 25 ml of each sample was placed into 225 ml of PSB (peptone sorbitol bile) broth which was incubated at 22°C and sampled at 2 and 6 days onto CIN agar according to the procedure described in the Bacteriological Analytical Manual, 6th ed., 1984.

Results:

Filter Unit No.	Sample	Recovery of Y. enterocolitica	
		CIN agar (No. Y. enterocolitica/ml)	Enrichment[a]
1	5 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	450 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	955 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
2	5 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	450 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	955 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
3	5 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	450 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-
	955 gallons		
	50 ml	<10	-
	1 liter	<10	-
	2 liters	<10	-

[a]-, negative for Y. enterocolitica.

Discussion:

No cells of Y. enterocolitica were detected in any of the filtered water samples indicating that the filtration units effectively removed the organism from tap water under the conditions of the test.

SEAGULL IV' ün Su Arıtımında Yüksek Teknolojisi, Türkiye'de de Onaylandı !

TÜRKİYE' NİN EN SAYGIN KURULUŞLARINDAN HIFZISSIHHA MÜESSESESİ' NİN SEAGULL IV İÇİN VERDİĞİ RAPOR

T.C.
İSTANBUL
BÜYÜKŞEHİR
BELEDİYE BAŞKANLIĞI

Sağlık İşleri Müdürlüğü
Ş.Hıfzıssıhha Müessesesi

27.5.1993

Kimya Şube Rapor N:3538/1149

ÇAMLICA İnşaat ve Ticaret A.Ş. tarafından 4.5.1993 tarihinde gönderilen Amerika Birleşik Devletlerinde kurulu General Ecology Firmasından ithal edilen SEAGULL XI-F marka Su Temizleme Cihazının yapılan Bakteriyolojik ve Kimyasal analizinde;

Madde	Cihaza Giriş suyundaki Konsantrasyon	Cihazdan Çıkış Suyundaki Konsantrosyon
Fecal Bacteria	1.150 000/lt	0
Klebsiella sp	900 000/lt	0
E.Coli Bacteria	250.000 000/lt	0
Chlorine	57055 mg/lt	0
H_2S	570 03 mg/lt	0
Methylene blue dye	25 gms/1.000 gal	0
Asbestos	Yoğun	0
Arsenic	100 PPB	0
Cadmium	100 PPB	0
Lead	100 PPB	0
Mercury	100 PPB	0
Methyl Mercury	100 PPB	0
Turbidity	126 mg per.litre	0
Colour	5 pts	0

SONUÇ: Değerleri Bulunmuş olup,cihaz çıkışı filtre suyunda yukardaki kirlilik maddelerinin tesbit edilemediğini bildirir rapordur.

Kimyager — Selma BAYRAKTAR

Biyolog — Ervin KARABULUT

Kim.Müh.Lab.Şefi — Emin BULUT

Sağ.İşl.Lab.Hizmet.Yrd. — Dr.Hasan OĞAN

SEAGULL IV' ün Su Arıtımında Yüksek Teknolojisi, Türkiye'de de Onaylandı !

TÜRKİYE' NİN EN SAYGIN KURULUŞLARINDAN ORTADOĞU TEKNİK ÜNİVERSİTESİ ÇEVRE MÜHENDİSLİĞİ' NİN SEAGULL IV İÇİN VERDİĞİ RAPOR

1956

MIDDLE EAST TECHNICAL UNIVERSITY
ENVIRONMENTAL ENGINEERING DEPARTMENT
Ankara 06531, Turkey

Tel: 2101000/2642
Fax: 2101260

Camlıca İnsaat ve Ticaret A.S.
Ortakcılar
Paşmakçı Cayırı Cad. 5.
34030 Eyüp
İstanbul

28.5.1993

Camlıca İnsaat A.S. tarafından Bölümümüze getirilen ve U.S. General Ecology Inc. firması tarafından üretildiği anlasılan SEAGULL IV marka 138669 seri no'lu cihazın su arıtımındaki etkinliği labaratuvarımızda, asağıda belirtilen sartlarda arastırılmıs olup cihazın denen tüm parametrelerde % 100 arıtım sağladığı tespit edilmistir. Bilgilerinize saygılarımla sunarım.

Prof.Dr. Celal F. Gökçay

Deneme Tarihi: 27.5.1993
Debi: 8 ve 30 l/saat olmak üzere iki debide deneme yapılmıstır. Deneme Süresi 2 saattir

SONUCLAR

Parametre	Giris	Çıkıs 8 l/sa	Çıkıs 30 l/sa	% Arıtma
o Toplam Koliform organizma	350/100 ml	0/100 ml	0/100 ml	100
o Fekal Koli (Koli basili)	200/100 ml	0/100 ml	0/100 ml	100
o Toplam Bakteri (tipik + atipik koloniler)	420/100 ml	0/100 ml	0/100 ml	100
o Serbest Klor	30 ppm	0 ppm	0 ppm	100
o Metilen Mavisi (652 nm absorbans)	0.8	0	0	100
o Türbidite (bulanıklık)	85 NTU (bulanık)	0 NTU (berrak)	0 NTU (berrak)	100
o Renk (652 nm)	0.8 koyu mavi	0 renksiz	0 renksiz	100
o Elektriksel iletkenlik µmhos	825	650	650	21

villanova university
LANOVA, PENNSYLVANIA 19085

November 25, 1975

Biology Department

In the Villanova University microbiology laboratories, using standard U.S. Enviromental Protection Agency procedures for water purifier bacteria testing, three different General Ecology water purifier cartridges (Type XRS-1) were tested, in standard General Ecology stainless steel SEAGULL(TM)IV one gallon/minute filter housings. The three cartridges were engraved with different production batch numbers: 186, 190, and 201.

Sterilized dechlorinated tap water containing approximately 270,000,000 colonies/liter (270,000/ml) of E. Coli ATCC 11229 was passed through each unit. After passage of 1 liter of this water to insure complete displacement of any previous water, the next 100 ml of effluent was collected from each unit. One ml of that was immediately diluted with 99 ml of a solution containing 0.05% sodium thioglycollate and 0.073% sodium thiosulfate per EPA neutralizing procedure. At least 5 samples from each filter were immediately plated out on Bacto-Tryptone Glucose Extract Agar, the medium specified, using disposable plate dishes and procedures for Fermentation Tube Test as outlined in Standard Methods for the Examination of Water and Waste Water, APHA, New York 10019. Temperature was 23°C (73°F); pH of the influent tap water was 6.5. As noted, input water contained 270,000,000 colonies/1.

None of the effluent samples contained any detectable organisms.

Approximately 500 gallons of tap water were then run through each of the units, and the process repeated. Again, no detectable organisms were found in any of the effluent water samples.

Then 500 more gallons (total - 1000 gallons) of tap water were run through the units, and again the effluent was checked in the same manner, for presence of the coliform organisms. Again, none was detected.

Turbidity: input water was cloudy; effluent was absolutely clear.

Conclusions: The General Ecology cartridges tested appear capable of completely removing extremely high bacteria loads from contaminated water, rendering it potable.

Test Data Summary - E. Coli ATCC 11229 - General Ecology XRS-1 Cartridges

Gallons Throughput	Bacteria Count			
		General Ecology Cartridge Batch Number		
	Control	186	190	201
Start- (initial gallon)	270,000,000/1	0	0	0
after 500 gallons	305,000,000/1	0	0	0
after 1000 gallons	275,000,000/1	0	0	0

John D. Friede, Ph.D.

John D. Friede, Ph.D.
Assistant Professor of Biology

villanova university
VILLANOVA, PENNSYLVANIA 19085

Biology Department

December 17, 1974

A General Ecology XRS cartridge was flushed for two hours with running tap water, and a water sample containing a test dose of Salmonella typhi ATCC 19430 was passed through it. Samples of the water and the effluent were plated on Bismuth Sulfite Agar before and after neutralization with sodium thioglycollate. The number of organisms in the water entering the cartridge was about 1800/ml. (1,800,000/liter). The effluent did not contain detectable organisms in either neutralized or unneutralized samples.

Bismuth Sulfite Agar is selective for S. typhi which grows rapidly and luxuriously while other organisms are inhibited. It is the recommended medium for isolation of this pathogen from feces or other samples suspected to contain it.

Turbidity: input water was cloudy; effluent was absolutely clear.

John D. Friede

John D. Friede, Ph.D.
Assistant Professor of Biology

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SEAGULL•IV

NEW YORK STATE PRODUCT DATA SHEET

Manufacturer:

General Ecology, Inc.
151 Sheree Boulevard
Lionville, PA 19353

Product Brand Names:

SEAGULL•IV X-1 Drinking Water Purification Device, Config. B,F,D, P
SEAGULL•IV X-2 Drinking Water Purification Device, Config. B,F
SEAGULL•IV X-6 Drinking Water Purification Device

FIRST NEED• Water Purifier, Config. D, C

TRAV-L-PURE• Water Purifier, Config. F, D, C

These units are defined as Purification Devices based on the EPA 1975 Interim Standards for Water Purifiers. It is understood that the EPA has now abandoned the 1975 standards. However, General Ecology continues to use them as quality assurance performance standards.

Installation Instructions: Provided with each system

Operating Conditions:

	X-1	X-2	X-6	FN - TP	
Housing	Stainless steel	Stainless steel	Stainless steel	Polypropylene	
Cartridge	RS-1SG	RS-2SG	RS-6SG	FNRC	TPRC
Particle Retention	---.1 micron nominal		(.4 micron absolute)		---
Pressure (psig)min/max	20/125	20/125	20/100	80 max.	80 max.
Flow Rate (gpm @ 20psi)	1	2	6	.4	.4
Avg. capacity (gals)	1,000	2,000	6,000	100	100
Temp (^{o}F)min/max	35/145	35/145	35/145	35/145	35/145
pH min/max	5/9	5/9	5/9	5/9	5/9

Flow rate and capacity will depend on operating conditions and contaminate characteristics. The cartridge should be replaced when the flow rate drops significantly or at least annually.

Performance Data:

Metals:	Influent	Effluent	% Reduction	Maximum Contaminant Level
Lead	90 ppb	< 5 ppb	> 94%	20 ppb

Microbiological:

	Influent	Effluent	% Reduction	Maximum Contaminant Level
Escherichia coli	10^7 col/100 ml	0	100%	0/100ml
Salmonella Typhi	10^5 col/100 ml	0	100%	0/100ml
Fecal Coliform	10^3 col/100 ml	0	100%	0/100ml
Giardia	13,000/500 gal.	0	100%	----

Chemical:

Ethylene dibromide (EDB)	1.9ppb	< .02ppb	> 99%	---
Temik (Aldicarb)	228ppb	< 1ppb	> 99%	---
Trichloroethylene (TCE)	378ppb	< .1ppb	> 99%	5ppb
P-chlorobenzene	10ppb	< .1ppb	> 99%	---
Hexachlorobenzene	10ppb	< .1ppb	> 99%	---
Chlordane	50ppb	< 1ppb	> 98%	20ppb
Tetrachloroethylene	50ppb	1.5ppb	97%	---
Carbon Tetrachloride	20ppb	.6ppb	97%	5ppb
1,1,1 Trichloroethane	120ppb	< 2ppb	> 98%	200ppb
1,1,2-Trichloroethane	20ppb	< 2ppb	> 90%	---
1,1-Dichloroethylene	10ppb	< 2ppb	> 80%	7ppb
Diisopropyl ether	89ppb	ND	> 99%	---
Total trihalomethanes	92ppb	ND	> 99%	100ppb
Dichloroethane	9.8ppb	.009	91%	---
Methylene Blue Dye	660ppm	ND	> 99%	---
Chlorine	.5 to 55ppm	ND	> 99%	---
H_2S	2 to 3ppm	ND	> 99%	---
Turbidity	126ppm	ND	> 99%	1TU
Color	5 point count units	ND	> 99%	15units
Asbestos	Extremely heavy	ND	> 99%	---

Although only 99% removal is indicated, much greater reduction or complete removal within the defection procedure was achieved.

NOTE: Tests were performed on various configurations, all of which share a common technology. The tests were conducted within the operating conditions previously described.

Important: The data are based on documented results from specific testing and are generally regarded as indicative of the effectiveness to be expected, but are not specific claims of performance. Performance may vary due to water chemistry and system operating conditions.

Warranty: Workmanship on the FIRST NEED® and TRAV-L-PURE® units are warranted for one year.

Workmanship on the stainless steel X-1, X-2, and X-6 systems is warranted for five years.

Cartridge capacity and performance will vary greatly depending upon input water characteristics and for this reason, specifically are not covered by this warranty.

nydatasg.109

MARIST COLLEGE RESEARCH INSTITUTE
POUGHKEEPSIE, NEW YORK 12601

(914) 471-3240

December 2, 1977

Mr. John Fitzpatrick
Clean All Company
Michael Lane
Norristown, Pa. 19401

Re: Seagull IV
Drinking Water Purifiers

Dear Mr. Fitzpatrick:

We have examined the filter device sent to our laboratory for evaluation. The PCB efficiency data are as follows:

Trial 3	PCB raw water (ug/l)	PCB filtered water (ug/l)
1. Water run through filter for 15 mins.	0.06	N.D. (0.01)
2. Water run through filter after 1,020 gallon usage	0.05	N.D. (0.01)

The tests indicated that this device when operated according to proper instructions will remove PCB residues in Poughkeepsie drinking water to levels below detectability. This means one could state that the unit virtually removes all PCB residues.

Thank you for your interest in the Institute and allowing us to be of service.

Yours truly,

Original Signed By Dr. Rehwoldt

Robert E. Rehwoldt, Ph.D.
Director

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MARIST COLLEGE RESEARCH INSTITUTE
POUGHKEEPSIE, NEW YORK 12601

(914) 471-3240

February 21, 1978

Mr. John Fitzpatrick
Clean All Company
Michael Lane
Norristown, Pa. 19401

Dear Mr. Fitzpatrick:

We have examined the Seagull IV water purification device on Feb. 20 for removal efficiency with regard to dichloroethane. The results are as follows:

3 gallons	Dichloroethane	9.0 ppb	Removed 91%
1020 gallons	Dichloroethane	9.8 ppb	Removed 91%

The Institute is pleased to have been of service.

Yours truly,

Original Signed by Dr. Rehwoldt

Robert E. Rehwoldt, Ph.D.
Director

ej

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MARIST COLLEGE RESEARCH INSTITUTE
POUGHKEEPSIE, NEW YORK 12601

(914) 471-3240

February 21, 1978

Mr. John Fitzpatrick
Clean All Company
Michael Lane
Norristown, Pa. 19401

Dear Mr. Fitzpatrick:

We have examined the Seagull IV water purification device on Feb. 20 for removal efficiency with regard to chloroform. The results are as follows:

3 gallons	Chloroform	60 ppb	-	Removed 97%
1020 gallons	Chloroform	61 ppb	-	Removed 97%

The institute is pleased to have been of service.

Yours truly,

Original Signed by Dr. Rehwoldt

Robert E. Rehwoldt, Ph.D.
Director

ej

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5705 North Lincoln Avenue
Chicago, Illinois 60659

22 West 23rd Street
New York, New York 10010

February 17, 1989

Dear Valued Larsam Customer:

As publisher of Consumers Digest, I am pleased to inform you that General Ecology, Inc.'s SEAGULL* IV X-6 water purification system has been designated as a "Best Buy" in the January/February issue of Consumers Digest. The X-1 and X-2 models were also recognized as "Best Buys."

The highly coveted "Best Buy" emblem distinguishes this line from the crowd because it signifies outstanding value in the marketplace to the consumer. In fact, only a small percentage of models in any product category earn this level of editorial recognition.

General Ecology will be promoting this achievement in a number of ways, including an imprint or label of the Consumer Digest "Best Buy" emblem on product packaging. Other point-of-purchase support materials are also being considered. These materials should be located in an area of high consumer traffic which will help increase sales on these "Best Buy" SEAGULL IV models. The awarding of this designation by Consumers Digest will create product demand and featuring the point-of-purchase materials in the store will be acknowledging to your shoppers that you have the SEAGULL IV product line in stock.

The "Best Buy" designation will help you to move SEAGULL IV purifiers very quickly. It might be advisable to check your inventory. You won't want to miss any sales opportunities.

Sincerely,

Arthur Weber

Arthur Weber
Publisher

*Registered trademark of General Ecology, Inc., Lionville, PA

FIELD EPIDEMIOLOGY SURVEY TEAM

DAVID TAPLIN
Professor, Dermatology
Professor, Epidemiology and Public Health
Chief, Division of International Community Medicine

March 24, 1986

Richard T. Williams, President
General Ecology Inc.
151 Sheree Blvd.
Lionville, PA 19353

Dear Richard:

I enclose some color prints of cultures we made in the Everglades March 16, 1986.

The method used is the Selecticult-U system, a brochure of which is enclosed. As you will note, it is a semi-quantitative dip slide culture system for detecting urinary infections. We have found it useful for field cultures of water sources and for testing filters. Legends are on the back of the prints. The system includes four types of media which were originally designed to isolate enteric pathogens, including salmonella, shigella, typhoid, enterobacter, and more. It, therefore, seemed like the ideal system, since it was designed for evaluating liquid specimens (urine). As far as we know, we are the only ones using it for water sampling. The culture paddles are supplied sterile and ready to use. They are also lightweight.

We performed this experiment as a demonstration for graduate students in the Everglades on March 16, 1986. One set is from Everglades surface water (labelled pond). The other is from a stirrup hand pump supply which is a 15 foot deep pipe.

All specimens were passed once through a new FIRST NEED filter. As you will note, all samples were negative for bacteria after filtration.

Prior to filtration, specimens contained approximately 100,000 colony forming units per ml. The samples showed no turbidity (it is impossible to detect 100,000/ml with the naked eye. Many of our sources in the field have much higher counts.

P.O. Box 016960 (R-117), Miami, Florida 33101
Telephone: (305) 547-6214

This experiment demonstrates the effectiveness of the FIRST NEED. It also shows that it is relatively simple to conduct controlled studies in the field. We plan to do more of this.

We recognize the potential value to you, but once again we are not soliciting support in order to keep ourselves "uncontaminated" by industrial sponsorship.

Our primary interest is to keep ourselves and other team members safe and healthy in the field, and to conduct our own quality control.

Sincerely,

David Taplin

David Taplin
Prof. of Dermatology,
Epidemiology & Public Health

Terri L. Meinking

Terri L. Meinking
Research Associate

DT:gh
Encl:10 ~~slide~~ color prints
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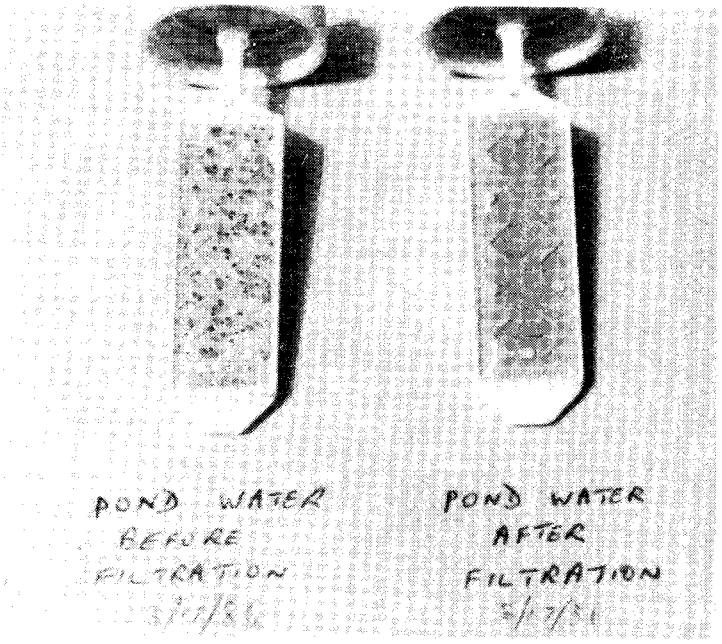

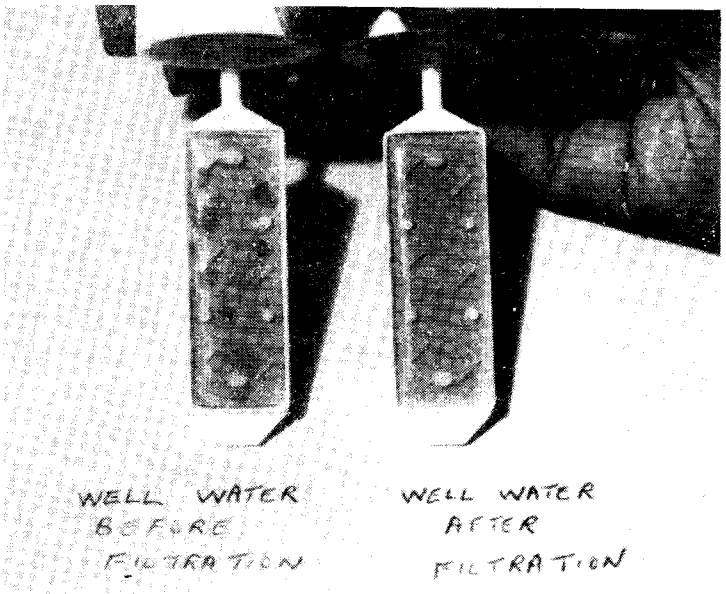

College of Veterinary Medicine
and Biomedical Sciences
Department of Pathology

Colorado State University
Fort Collins, Colorado
80523

May 9, 1986

EVALUATION OF SPARK-L-PURE® MICROFILTRATION SYSTEM CONTAINING AQUA-POLISH™ CARTRIDGE MODULES FOR EFFICACY AGAINST CYSTS OF GIARDIA LAMBLIA

INTRODUCTION

As requested by General Ecology, Inc., 151 Sheree Blvd., Lionville, PA 19353, three production-line units of the SPARK-L-PURE Microfiltration System containing AQUA-POLISH cartridge modules were delivered to be tested for efficacy against the cysts of Giardia lamblia. The units were fitted with 3/4 inch copper adaptors for residential use. The Company requested that each unit be tested at flow rates between 15 and 20 gpm for an average capacity of 30,000 gallons per unit. The average pressure loss across the modules at these flow rates was 12 psi.

To reliably evaluate the efficacy of a mechanical filter for removal of Giardia, live infectious cysts from a human source should be used. Live cysts of Giardia are somewhat pliable and can be forced through apertures somewhat smaller than their size (they measure 7 to 8 micrometers in diameter).

METHODS

Source of Giardia lamblia cysts. Live infectious cysts were obtained from human stool specimens through the courtesy of a local hospital. To verify infectivity, five gerbils were infected with material remaining from the trial and were shown to have infections of approximately 40 to 70 million trophozoites several days after infection. Counting of cysts was performed by direct microscopic examination of 50 microliter subsamples (4 replicate counts) and then extrapolated to determine cysts/milliliter and subsequently cysts/sample. The source for the trial was determined to have a total of 1.2×10^8 cysts.

®,TM: Tradenames property of General Ecology, Inc., Lionville, PA 19353, U.S.A.

Source of water. The source of water is the Fort Collins municipal supply, a filtered and chlorinated surface source with a temperature of 6-8°C and free chlorine of 0.50 ppm.

Test conditions. The flow rate through the SPARK-L-PURE units was about 19 gpm. Each filter, prior to the test, was stabilized by passing about 10 gallons of water through the system. The microfilters were challenged with Giardia cysts at 10 gallons, at about one-half the average capacity, and again at the rated capacity of about 30,000 gallons/unit. At each challenge a calculated dose of 200,000 cysts were siphoned into the influent line. During the first and last challenge a calculated 400,000 cysts were introduced (200,000 for challenge and 200,000 for quality control). An "on-off" lever was affixed to the effluent side of the filter and, as the unit was being challenged, it was "pressure shocked" with the "on-off" lever until all of the challenge dose had an opportunity to pass into the unit. Pressure within the unit varied from 12-80 psi during the challenge. At each challenge a total of 16 liters of water was collected for analysis.

RESULTS

The three SPARK-L-PURE units completely removed all Giardia cysts at the first two challenge points and showed better than 99.999% (five-log) reduction at the final sampling (after 29,800 to 29,988 gallons). Although some cysts passed at the third challenge, the numbers recovered were regarded as essentially insignificant. Control samples averaged 215,800.

DISCUSSION

Each of the three units retained approximately 600,000 cysts at the time of last sampling at the manufacturer's rated capacity. A challenge of 6×10^5 cysts is almost infinitely greater than would ever be encountered even in the worst possible situations. The majority of outbreaks are in the range of 1 cyst/10 gallons of water. Obviously, the SPARK-L-PURE units were severely challenged and performed superbly, even under shock influent loadings.

CONCLUSION

General Ecology's SPARK-L-PURE Microfiltration Systems containing AQUA-POLISH cartridge modules are superb systems for removal of cysts of Giardia lamblia.

[Original signed by Charles P. Hibler, PhD]

Charles P. Hibler, PhD
Director, Wild animal Disease Center
Colorado State University

College of Veterinary Medicine
and Biomedical Sciences
Department of Pathology

Colorado State University
Fort Collins, Colorado
80523

February 6, 1981

M E M O

TO: Mr. Thomas C. Spence, Owner
The Pure Water Place, Inc.
P.O. Box 2311
Estes Park, CO 80517

FROM: Charles P. Hibler

SUBJECT: Evaluation of the SEAGULL IV Water Purification System

REMARKS:

As per your request, the SEAGULL IV Water Purification System was evaluated against Giardia sp. The system utilized was the stainless steel container designed for application to the existing household water supply.

PROCEDURE:

A stool specimen from a dog with a clinical case of giardiasis was obtained from the Veterinary Teaching Hospital. Examination of this stool sample revealed that the Giardia cysts were all in excellent shape. The stool sample was added to distilled water, and strained through eight layers of cheese cloth, allowed to stand for five minutes, and then decanted into another jar. The water volume was adjusted to one gallon. At this point, the gallon of distilled water containing Giardia cysts was slightly "murky" in color. Four ten milliliter aliquots were removed, processed by the zinc sulfate centrifugal flotation technique, and the number of Giardia cysts counted per each sample. Evaluation of the aliquots indicated that between 110,000 and 116,000 (average 113,000) cysts of Giardia were present in the gallon of distilled water.

The SEAGULL IV Water Purification System was attached to the Fort Collins City Water Supply System and the rate of flow adjusted to one gallon per minute. Approximately 25 gallons of water were passed through the system to periodically examine the rate of flow. A vacuum (siphon-device) was incorporated into the system. The siphon-device was inserted into the gallon of distilled water containing Giardia cysts and this material mixed with the tap water and passed through the SEAGULL IV when the faucet system was operated.

The system was allowed to function for a total of 8.5 hours processing approximately 500 gallons of contaminated water. During this time Giardia cysts from the gallon of water were being fed in at a continuous rate. Every thirty minutes, a one gallon sample of the purified water discharged by the SEAGULL IV was taken for subsequent examination. This water was preserved in 2% formalin (v/v). The one gallon samples were refrigerated for 48 hours, and then decanted, leaving only 500 milliliters of material.

During the course of the 8.5 hours of filtration, samples of the distilled water containing Giardia cysts were removed for evaluation. A sample was removed at the beginning the experiment, another at 2 hours, another at 4 hours, and a final sample removed at the termination of the experiment. All of these samples consisted of 10 milliliter samples, and the total number of Giardia cysts recovered fell within the range of the original gallon of material (see above). Moreover, all of the cysts were in excellent shape.

After decanting the one gallon containers, keeping the bottom 500 milliliters of liquid, they were placed in smaller glass containers and returned to the refrigerator. A total of 13 gallons of material from the 500 gallons passing through the filter was kept for analysis. The 500 cc's of liquid remaining from each gallon was further concentrated by centrifugation at 2,000 RPM for 10 minutes. The supernatent was withdrawn, zinc sulfate at a specific gravity of 1.18 added together with 2 drops of Lugol's iodine, and the tube filled with zinc sulfate until the meniniscus bulged slightly. A clean glass cover slip was afixed to the top of this tube and the material centrifuged at 2,000 RPM for 2 minutes. The cover slip was removed, placed on a glass histology slide, and examined with the aid of a binocular microscope at 100 X.

RESULTS:

The first sample taken at zero time, and the second sample taken at 30 minutes were so clean that the examiner (Hibler) was unable to find any debris on the slides. Consequently, the last sample (#13) was concentrated and examined as above. This sample was likewise so clean that the examiner could not find any debris on the slide. As a result of this, the investigator (Hibler) then concentrated the remaining ten gallons (actually the 500cc's remaining from each gallon) and examined a composite of two 30 minute samples, for example, the sample taken at 9AM was combined with the sample taken at 9:30AM, concentrated and processed as above. All of the remaining ten samples were so clean that the investigator (Hibler) was unable to find any material on the microscope slide.

After the 500 gallons of tap water together with one gallon of distilled water containing Giardia cysts had been passed through the SEAGULL IV, the cartridge was dismantled and the investigator (Hibler) made an effort to "back flush" the filter cartridge. Back flushing the filter cartridge was not effective; however, the material the investigator (Hibler) was able to back flush, was heavily laden with excellent Giardia cysts, and a considerable number of cysts of free-living protozoa, many different types of algae, arthropod larvae, plant material, together with considerable quantities of flocculent-like unrecognizable debris. This material obviously originated from the Fort Collins City Water System.

SUMMARY AND CONCLUSIONS:

In summary, after approximately 113,000 Giardia cysts were fed into the SEAGULL IV, a total of 13 gallons of water removed from this filter throughout the course of its operation, revealed that no Giardia, nor any other debris passed the filter. In regards to its ability to remove Giardia, I would rank SEAGULL IV as outstanding. Moreover, the investigator (Hibler) did note that the rate of flow from the beginning of the experiment, to the termination of the experiment remained constant at one gallon per minute.

Original signed by
Charles P. Hibler, PhD
Director, Wild Animal Disease Center
Colorado State University

Betz • Converse • Murdoch • Inc. BCM
Consulting Engineers, Planners and Architects

January 22, 1980

Mr. Huey
Eco-Pure, Inc.
P.O. Box 553
Valley Forge, PA 19481

Dear Mr. Huey:

The following report covers the laboratory examination for TCE-removal by General Ecology's SEAGULL^{R} IV drinking water purification device. The samples were collected by and delivered to the BCM laboratory by L. Caparro, Fairview Village, PA.

Total Gallons Through Purifier(1)	TCE in Tap Water Before Purification	TCE in SEAGULL^{R} IV Purified Tap Water
5	235 ppb	$<$0.1 ppb(2)
1000(3)	378 ppb	0.1 ppb
2000(4)	417 ppb	1.4 ppb

ppb is parts per billion; 4.5 ppb suggested safe limit for long-term exposure.

(1) Gallons and capacity data supplied by customer
(2) None detected within the capabilities of the detector equipment
(3) Nominal rated capacity of SEAGULL^{R} IV, X-I purifies; RS-ISG cartridge
(4) 200% of rated capacity of RS-ISG cartridge

Should you have any questions regarding this report, please do not hesitate to contact us.

Very truly yours,

Frank J. Kernozek, PhD.
Section Manager
Laboratroy Services

/nlp
cc: Louis Caparro

Eastern Group
One Plymouth Meeting Mall • Plymouth Meeting, PA 19462 • Phone: 215 • 825-3800 • TWX 510-660-8034

Betz • Converse • Murdoch • Inc. BCM
Consulting Engineers, Planners and Architects

October 18, 1979

Clean All Co.
Michael Lane
Norristown, PA 19401

Samples Dated: as shown
" Received: as shown

Attention: Jack Fitzpatrick

The following report covers the laboratory examination for TCE-removal by General Ecology's SEAGULL^{R} IV drinking water purification device.

Samples Collected by BCM Personnel	Trichloroethylene, Parts/billion	Perchloroethylene, Parts/billion
Alderfer Water, 9/24 Before SEAGULL IV RS-1	85.4	<0.1
Alderfer Water, 9/24 After SEAGULL IV RS-1	<0.1	<0.1 After 4 gals. thru-pu
Alderfer Water, 9/26 Before SEAGULL IV RS-1	64.3	<0.1
Alderfer Water, 9/26 After SEAGULL IV RS-1	<0.1	<0.1 After 1012 gals. thru put
Samples Collected by Clean All Co.		
Quay Water, 9/28 Before SEAGULL IV RS-1	155.2	<0.1
Quay Water, 9/28 After SEAGULL IV RS-1	<0.1	<0.1 After 860 gals.

Very truly yours,

Frank G. Kernozek, PhD.
Laboratory Services
Section Manager

/nlp

TIGHE & BOND
CONSULTING ENGINEERS
ENVIRONMENTAL SPECIALISTS

Philip W. Sheridan
David G. Healey
John W. Powers

Dennis H. Bianchi
Thomas C. Couture
William B. Allen
Ronald A. Michalski
Michael R. Parsons
James S. O'Reilly

Emeriti
Edward J. Bayon
George H. McDonnell

40019-4-50
November 8, 1984

To Whom It May Concern:

In May 1984, our laboratory received four (4) water samples from Pioneer Ecology. These samples included a prefilter sample contaminated with 1.9 parts per billion (ppb) ethylene dibromide (EDB) and three (3) filtered samples which had been taken at different times during the filtration of the ethylene dibromide contaminated water. The filtered samples were collected after 217, 486, and 1050 gallons of the EDB-contaminated water had passed through the Seagull filter. No ethylene dibromide was found in the filtered samples at the sensitivity of the analytical method which was 0.02 ppb.

Very truly yours,

TIGHE & BOND

Carol Sacco

Carol Sacco
Lab Director

CS/lr/F1/K

50 Payson Avenue,
Easthampton, Mass. 01027
TEL. 413-527-5600
413-533-3991

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Emeriti
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George H. McDonnell

40019-4-50
November 9, 1984

To Whom It May Concern:

In April 1984, our laboratory received four (4) water samples from Pioneer Ecology. These samples included a prefilter sample contaminated with 228 parts per billion (ppb) Temik (aldicarb) and three (3) filtered samples which had been taken at different times during the filtration of the Temik-contaminated water. The filtered samples were collected after 203, 550, and 1010 gallons of the Temik-contaminated water had passed through the Seagull filter. No Temik was found in the filtered samples at the sensitivity of the analytical method which was 1.0 ppb.

Very truly yours,

TIGHE & BOND

Carol Sacco

Carol Sacco
Lab Director

CS/lr/F1/K

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Randall S. Aguiar
Assistant to the Chairman
Executive Director for
Administrative Affairs
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August 25, 1987

Professor David Taplin
University of Miami
Department of Dermatology
P.O. Box 016250 (R-250)
Miami, FL 33176

Dear Professor Taplin:

During the past month I have conducted several experiments to test the ability of the First Need purification water device to eliminate pathogenic bacteria from contaminated water samples.

My first experiment took place in the Florida Everglades. Filtered and non-filtered water samples were collected in triplicate in sterile glass bottles. All samples were quantitated on CLED and MacConkey agar utilizing the Spiral Plater System. The Spiral System distributes the sample on the surface of a rotating agar plate. The dispensing arm moves from the center of the plate towards the outside depositing the sample in an Archimedes spiral. A decreasing volume of sample is thereby released, resulting in a concentration range of up to 10,000:1 on a single plate (Figure 1, 2 enclosed.)

The results from the trip are summarized below [bacterial counts are expressed as colony forming units per milliliter (CFU/ml)]:

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Site 1
Temp: 82.9 F
pH: 7.0

"Cheekee Pond"

NON-FILTERED

Sample	CLED	MacConkey
1	3081	919
2	3405	946
3	2946	784

FILTERED

Sample	CLED	MacConkey
1	0	0
2	0	0
3	0	0

Site 2
Temp: 82.4 F
pH: 6.5

"Pond Apple Slough"

NON-FILTERED

Sample	CLED	MacConkey
1	6486	1081
2	5811	1000
3	6270	1027

FILTERED

Sample	CLED	MacConkey
1	0	0
2	0	0
3	0	0

CLED agar is utilized for the isolation and characterization of urinary tract bacteria. MacConkey agar is used for the isolation of gram negative bacilli.

The First Need effectively removed all the bacteria present in the water samples. In addition a third site was sampled, but no bacteria were recovered in the non-filtered samples. This site was a sulphur aquifer which came directly

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from the water table. The First Need was able to eliminate the sulphur smell present in the original water.

In the second set of experiments, conducted in the lab, I inoculated 500 ml of sterile distilled water with approximately 1.43 X 10^8 CFU/ml Escherichia coli. The filtrate was collected and quantitated on MacConkey and blood agar plates. Upon incubation at 37°C for 24 hours, the plates showed no colonies (Figure 3, 4 enclosed).

One week later I inoculated 500 ml sterile distilled water, but this time the water was seeded with approximately 5.46 X 10^6 CFU/ml Vibrio parahaemolyticus. I then proceeded to filter the inoculated water through the same filter which was used for the E. coli. The filtrate was quantitated after incubation at 37°C for 24 hours. Approximately 35.1 CFU/ml were recovered in the filtrate. This represents only .0006 % of the original inoculum.

Finally, I wished to determine if any of the previous pathogens could be eluted from the contaminated filter. I passed 500 ml sterile water through the original filter and again quantitated the filtrate; no bacteria were recovered.

Future experiments are in the process of being planned. I hope to determine if the filter can purify water contaminated with bacterial toxins.

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Additionally, I would like to explore the ability of the filter to retain viruses.

In conclusion, this is a short summary of the work already completed. Any questions or ideas for future studies would be greatly appreciated.

Joseph M. Patti
Joseph M. Patti
MSPH candidate

cc: Richard Williams
Patricia M. Mertz
Terry Meinking

Atts.

"Better Water is our Business"

Pacific Pure Water, Inc.

TROPISOF Water Conditioning Systems

The following report covers the laboratory tests conducted by FOOD QUALITY LAB located at 2146 Puuhale Place, Honolulu, HI., for dissolved lead removal by General Ecology's SEAGULL IV drinking water purification device. This was done on water samples taken from the island of Hawaii. The testing took place in October, 1988.

Sample #	Location	Cartridge Age	Lead content before purifier	Lead content after purifier
4923P	Capt.Cook	1 yr 9 mos.	45 PPB (1)	N.D. (2)
S092P	Honaunau	3 mos.	40 PPB (1)	N.D. (2)
4599P	Kapoho	1 mo.	30 PPB (1)	N.D. (2)
2292	Volcano	1 yr.	20 PPB (1)	N.D. (2)
2292	Volcano	New	20 PPB (1)	N.D. (2)
1219	Kealakekua	1 yr 2 mos.	90 PPB (1)	N.D. (2)
4498P	Honaunau	1 mo.	25 PPB (1)	N.D. (2)

(1) PPB stands for Parts Per Billion - 50 PPB max. is considered a safe limit by EPA.

(2) N.D. - None detected - Less than 5 PPB. Lower detection level of test equipment is 5 PPB.

Exclusive distributors of the SEAGULL IV Water Purification Device

Corporate Offices at 1144 Young Street • Honolulu, Hawaii 96814
Honolulu 545-3422 Hilo 961-4432 Kona 322-8080 Maui 244-0078
Molokai 558-8253 Tokyo, Japan 03-394-1028

Wyoming Centennial Everest Expedition

Box 189 ● Pinedale, Wyoming 82941 ● (307) 367-2270

January 3, 1989

General Ecology
151 Sheree blvd.
Lionville, Pa. 19353

Dear General Ecology:

We are back from Mt. Everest after an arduous trip across China and Tibet. We encountered the worst monsoon and flooding conditions in Tibet in 100 years. Nowhere could we be certain the water was safe. I was extremely thankful that we had a number of the latest model of the First Need water filters. During the entire trip no one of the 40 people traveling with the expedition became sick because of the water. Traveling in Asia, especially in Tibet, is still very much an adventure. They are not at all use to the minimum standards of proper hygiene and many people routinely have intestinal problems.

We used the First Need Water Filters, with the pre filter in glacial run off all the way up to 21,000 ft. We could never trust the water unfiltered for camps I, II, and III. The newly designed handled and grip made the filters easy to use.

I always travel in the wilderness now with a water filter and my filter of choice is First Need. Its very effective, small, and easy to use. Whether I'm guiding in the mountains of Wyoming, Alaska or Canada or climbing in the Himalaya my travel gear ALWAYS includes the First Need water filter.

You've a fine product that I would recommend to anyone traveling where the water is unreliable. The COWBOYS ON EVEREST expedition was certainly glad to have First Need purifiers with us.

Sincerely,

Jeb Schenck
High Altitude Team Leader

DAN LANGMADE 2639 EAST ADAMS STREET PHOENIX, ARIZONA 85034 (602) 273 1361

SPONSORED BY THE AMERICAN ALPINE CLUB

February 10, 1984

Ann Pombrekas
GENERAL ECOLOGY INC.
151 Sheree Boulevard
Lionville, PA 19353

Dear Ms. Pombrekas:

In August of 1984, seven of us climbers will begin our ascent of Himalchuli, 25,880 feet, in the Himalayan Range of Nepal. Himalchuli is a remote peak which has only two previous ascents, both by Japanese climbers along the same route. Our plan is to attempt three new routes on the mountain, as well as to make the first American ascent of the mountain. Because of our two reconnaissance trips to the mountain and our experienced, highly motivated group, we feel our chances for success are high. Enclosed is our prospectus, which will give you more details.

In preparing for the expedition, we are in the process of selecting the best possible equipment to meet the extreme conditions we face on the mountain. We are presently searching out water purification methods so our climbers will not become ill during our 200 mile approach through the foothills to base camp. Your portable water purifier seems perfect for our needs. Would you be willing to supply 10 units and replacement canisters as necessary to the expedition?

Because of the high costs we will be meeting for this expedition, we are seeking donations of equipment whenever

MICHAEL YAGER 5225 12TH AVENUE NE SEATTLE, WASHINGTON 98105 (206) 525-1723 • DAN LANGMADE 2639 EAST ADAMS STREET PHOENIX, ARIZONA 85034 (602) 273-1361
RICK A. ST ONGE, M.D PENTUCKET ORTHOPAEDICS 10 DOANE STREET BRADFORD, MASS. 01830 (617) 374-0117 • JACK MILLER P.O. BOX 106 RIDGEWAY, COLORADO 81432
CORINNE COLLINS-YAGER, TREK COORDINATOR 5225 12TH AVENUE NE SEATTLE, WASHINGTON 98105 (206)525-1723
STACY STANDLEY C/O TIGER TOPS NEPAL BOX 242 DURBAR MARG KATHMANDU, NEPAL ASIA